

**Carnivorous bivalve molluscs (Anomalodesmata)  
from the tropical western Pacific Ocean,  
with a proposed classification  
and a catalogue of Recent species**

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## ABSTRACT

This paper deals with 37 species of carnivorous anomalodesmata bivalves usually assigned to the septibranchs, originating from the Philippines, Indonesia and New Caledonia. Eight species are described as new: *Cetocoucha boucheti*, *C. exigua*, *Cuspidaria morrisae*, *C. (Soyonoya) clathrata*, *Halicardia houbricki*, *Haliris teporis*, *Myonera rostra* and *Policordia olivacea*. New names are also provided here for two species with preoccupied names: *Policordia iranovae*, for *P. japonica* Ivanova, 1977, and *Myouera alleui* for *Cuspidaria (Myonera) atlantica* Allen & Morgan, 1981. A new classification of the carnivorous Anomalodesmata, based on F. R. Bernard's latest works, is proposed together with diagnoses of the supraspecific taxa and a catalogue of the living known species.

## RÉSUMÉ

**Mollusques Bivalves carnivores (Anomalodesmata) des régions tropicales du Pacifique occidental, avec une nouvelle classification et un catalogue des espèces actuelles.**

Cet article décrit 37 espèces de bivalves carnivores Anomalodesmata traditionnellement qualifiés de septibranches provenant des îles Philippines, d'Indonésie et de Nouvelle-Calédonie. Huit espèces sont nouvelles pour la science : *Cetocoucha boucheti*, *C. exigua*, *Cuspidaria morrisae*, *C. (Soyonoya) clathrata*, *Halicardia houbricki*, *Haliris teporis*, *Myonera rostra* et *Policordia olivacea*. De nouveaux noms ont aussi été attribués à deux espèces aux noms préoccupés : *Policordia iranovae*, pour *P. japonica* Ivanova, 1977, et *Myouera alleui* pour *Cuspidaria (Myonera) atlantica* Allen & Morgan, 1981. Une nouvelle classification des Anomalodesmata carnivores, fondée sur les derniers travaux de F. R. Bernard, est présentée ainsi que des diagnostics des différents taxa supraspécifiques et un catalogue des espèces vivantes actuellement connues.

## INTRODUCTION

### FOREWORD

The present paper is based on a manuscript of the second author, the late Dr Frank R. Bernard. At the end of 1988, Dr P. Bouchet showed me a first draft of a manuscript on West Pacific septibranch bivalves for which Dr Bernard wanted to have my comments before its completion, because I knew of the material he dealt with, having had the opportunity to study it partly and to publish a few papers about it. I quickly gave him an answer, but Dr Bernard could not work further on this paper and died shortly after, 29 March 1989. Later, the material on loan to him was returned to Paris, through the courtesy of Drs Glen S. Jamieson of the Pacific Biological Station, Nanaimo, and James A. Cosgrove of the Royal British Columbia Museum, Victoria, British Columbia (Canada). I was then asked by P. Bouchet to revise Bernard's draft for publication.

As it was already apparent to me in 1988, the manuscript was far from complete and could not be published without substantial revision. But it seemed worthwhile to do it, especially because of its classification of carnivorous Anomalodesmata, which can be considered as the outcome of Dr Bernard's ideas on the systematics of the septibranch group (for a review of F. R. Bernard's contributions, see MATSUKUMA, 1989).

Although I have greatly amended and completed the original manuscript, or even written many points in it, I tried to respect F. R. Bernard's personal opinions. However, in a few instances, when I could not agree with his interpretation of the material reported in this paper, I have decided against it. One of the new species described here (*Policordia olivacea*) is in this case.

J.-M. Poutiers

## MATERIAL AND METHODS

The bivalve mollusc material reviewed in this paper, kindly provided by Dr P. Bouchet, comprises carnivorous anomalodesmata species usually assigned to the septibranchs. It originates from several French expeditions organized in recent years in the Pacific Ocean, and comprises:

— Material collected during two expeditions by MNHN and ORSTOM to the central Philippines under the direction of Prof. J. Forest (MNHN): MUSORSTOM 1 in 1976 aboard N.O. "Vauban" (FOREST, 1981), and MUSORSTOM 2 in 1980 aboard N.O. "Coriolis" (FOREST, 1986).

Material collected during the CORINDON 2 cruise organized in 1980 by ORSTOM to the Straits of Makassar between Borneo and Sulawesi (Indonesia) aboard N.O. "Coriolis", with J. Forest responsible for biological data.

— Material collected by P. Bouchet and A. Warén off southern New Caledonia in 1978-79, aboard N.O. "Vauban" (RICHER DE FORGES, 1990).

Most of the finer residues from these expeditions was sorted by the Centre National de Tri d'Océanographie Biologique (CENTOB, IFREMER, Brest).

Unless otherwise stated, all material including holotypes is deposited in MNHN. Parts of the material collected in New Caledonia and in the Philippines during MUSORSTOM 1 expedition have been already investigated (MORTON, 1987; POUTIERS, 1981, 1982a, b, 1985).

A species from the USNM collections, dredged in 1909 by the "Albatross" during its Philippines expedition (BOWERS, 1910), has been added through the courtesy of the late Dr R. S. Houbrick.

The material comprises 37 species taken at 69 stations at depths from 70 to 1628 m. A list of stations, with main geographical and bathymetrical data and collected species, is presented in Appendix 1. Illustrations, bathymetric and geographic distributional data and a brief systematic description are given for each species taken. The known synonyms are listed, but no attempt has been made to cite all subsequent usages.

The descriptive section of this paper is followed by a brief summary of the classification, reflecting mainly F.R. Bernard's personal opinion. This synopsis has been improved and updated with as few modifications as possible, notably through the insertion of genus-group taxa introduced in 1983 by SCARLATO & STAROBOGATOV. Short diagnoses are provided for the supraspecific Recent taxa, with a listing of all the species belonging in each genus (or subgenus). A general list of the binomina has also been included at the end of this section. The authors have attempted to make this catalogue as comprehensive as possible, but it is likely to be incomplete. A free translation of the key paper by SCARLATO & STAROBOGATOV (1983) referred above is provided in Appendix 2.

Since 1984, when the material reported in this paper was sent to F. R. Bernard for study, a number of additional deep-sea expeditions have been led by the Paris Museum and ORSTOM in the Philippines (MUSORSTOM 3, 1985), in Indonesia (KARUBAR, 1991), and mainly in the New Caledonian economic zone (for a review of cruises in this area, see RICHER DE FORGES, 1990, 1993). They have resulted in many samples of carnivorous anomalodesmata Bivalves which will form the subject of forthcoming papers in which the first author will provide more personal views on septibranch classification.

## ABBREVIATIONS AND TEXT CONVENTIONS

### *Repositories*

AMS	: Australian Museum, Sydney
MNHN	: Muséum national d'Histoire naturelle, Paris
NMNZ	: Museum of New Zealand, Wellington
NSMT	: National Science Museum, Tokyo
USNM	: National Museum of Natural History, Washington, DC

### *Other abbreviations*

db	: paired valves, dead collected
spm(s)	: live-taken specimen(s)
v	: valve(s)
OD	: original designation.

## SPECIES ACCOUNTS

## Family VERTICORDIIDAE

*Spinosipella costeminens* (Poutiers, 1981)

Figs 1-2

*Verticordia (Spinosipella) costeminens* Poutiers, 1981: 351, pl. 4, figs 1-4, text-fig. 5.

MATERIAL EXAMINED. — **Philippines.** MUSORSTOM 1: stn 49, 13°49' N, 120°00.5' E, 750-925 m, 3 spms (holotype and paratypes).  
 MUSORSTOM 2: stn 55, 13°53.4' N, 19°57.8' E, 865-866 m, 3 spms, 3 db, 5 v.

DISTRIBUTION. — Only known from the Central Philippines, in 750-925 m.

DESCRIPTION. — *Shell* inflated, rather large for the genus, subquadrate, with spirally twisted umbones. With 16-17 thin, produced, blade-like radial ribs, one of which is much more prominent than the others and runs from umbo to the posteroventral angle of shell. Exterior surface covered with radial rows of small spines. Internal ligament short, arcuate,

reinforced by a large lithodesma. *Right valve* with a strong, conical, posteriorly recurved cardinal tooth. *Left valve* with a small corresponding denticle. Interior pearly white, with the external ribbing showing through. Margins deeply indented. Length: 23.5 mm.

REMARKS. — This elegant large species is distinguished by the blade-like shape of its radial ribs and the prominent umbo-posterior keel.

*Spinosipella deshayesiana* (P. Fischer, 1862)

Figs 7-9

*Verticordia deshayesiana* P. Fischer, 1862: 35, pl. 5, figs 10-11 (Published 7 January 1862).

Synonym:

*Verticordia japonica* A. Adams, 1862: 224 (Published in March 1862).

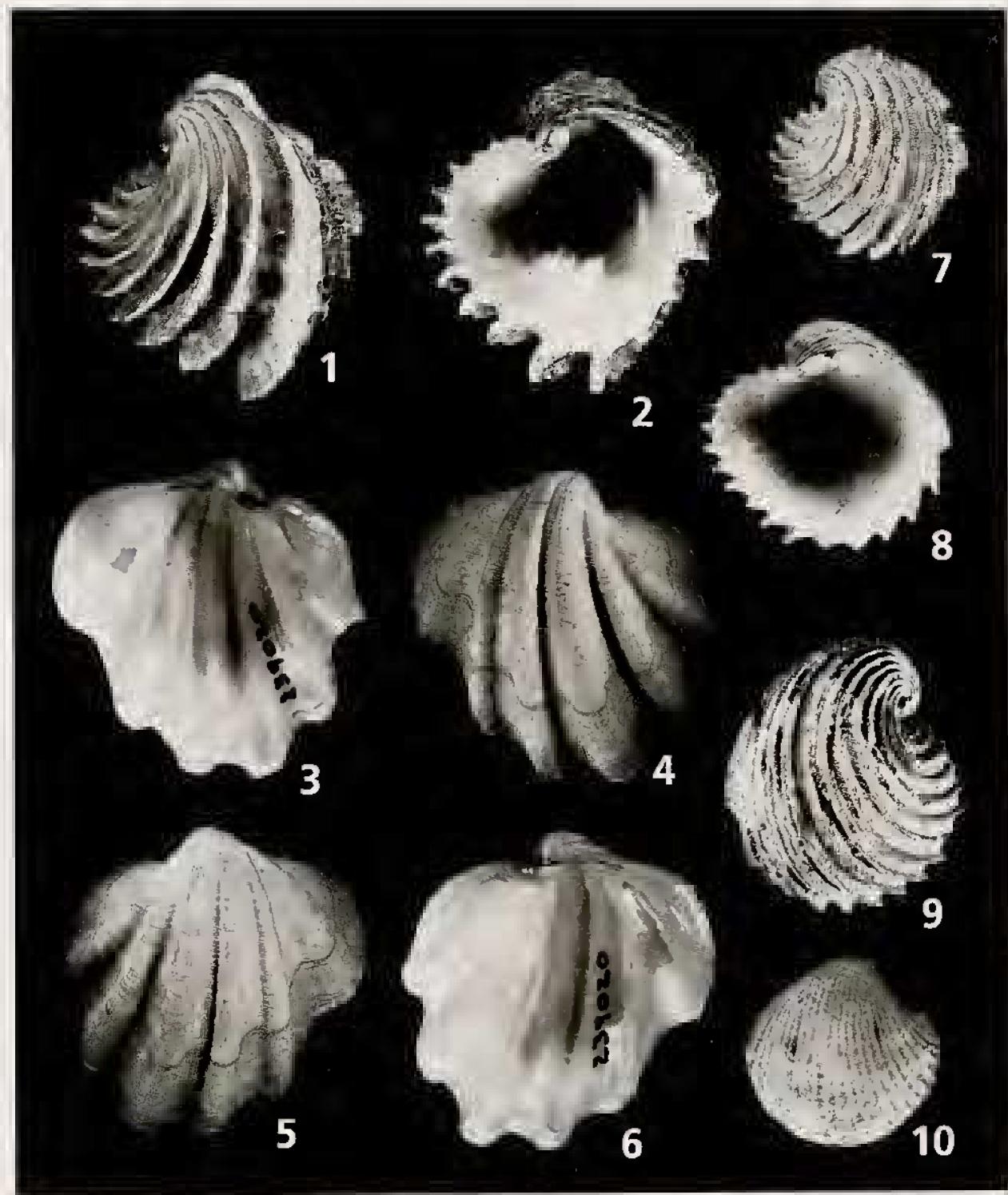
MATERIAL EXAMINED. — **Philippines.** MUSORSTOM 2: stn 33, 13°32' N, 121°07.5' E, 130-137 m, 3 v. — Stn 51, 13°59.8' N, 120°17' E, 170-187 m, 1 v.  
**New Caledonia.** "Vauban" 1978-79: stn 2, 22°17' S, 167°14' E, 425-430 m, 2 v. — Stn 4, 22°17' S, 167°13' E, 400 m, 3 v. — Stn 15, 22°49' S, 167°12' E, 390-395 m, 3 v. — Stn 16, 22°46' S, 167°12' E, 390-400 m, 2 v. — Stn 42, 22°08' S, 167°04' E, 230-260 m, 2 v.

DISTRIBUTION. — Indo-Pacific, East Africa, Indonesia, Thailand, South and East China Sea, Honshu, Japan to Hawaii and New Caledonia, in 40-693 m (HIGO & GOTO, 1993).

DESCRIPTION. — *Shell* solid, globose, rounded to ovate. Umbones prominent, spirally twisted, overhanging a small, deeply impressed lunule. Radial ribs strong and sharp, covered on crests with small prickly granules; interspaces with numerous, closely set, fine pustules more or less radially

aligned. Internal ligament reinforced by a strong lithodesma. Hinge of *right valve* with a large, conical, cardinal tooth. *Left valve* with a smaller corresponding denticle. Interior nacreous. Inner margins deeply crenulated. Length: 16.1 mm.

REMARKS. — The shell of this species is somewhat variable in rib number and general shape, larger specimens tending to be proportionately higher. Its relationships to the Atlantic *S. acuticostata* (Philippi, 1844) and the Indo-Pacific *S. ericia* (Hedley, 1911) have not yet been clearly elucidated. The latter is said to have a wide distribution (CROZIER, 1966) and to be smaller, rounder, with less



Figs 1-10. — Verticordiidae. — 1-2, *Spinosipella costemunens*, MUSORSTOM 2: stn 55, L = 19.2 mm, exterior of left valve (1), interior of right valve (2). — 3-6, *Halicardia houbricki* sp. nov., "Albatross"; stn 5582, holotype, L = 34.6 mm, exterior of left valve (3), exterior of right valve (4), exterior of left valve (5), interior of right valve (6). — 7-9, *Spinosipella deshayesiana*; 7-8, "Vauban" 1978-79; stn 42, L = 9.1 mm, exterior of left valve (7), L = 11.2 mm, interior of right valve (8); 9, "Vauban" 1978-79; stn 4, L = 16.1 mm, exterior of right valve (9). — 10, *Haliris multicostata*, MUSORSTOM 2: stn 33, L = 6.9 mm, exterior of right valve.

prominent umbones. However, these features seem rather mutable and may prove to fall within the range of individual or ontogenetic variations.

*Haliris multicostata* (A. Adams, 1862)

Fig. 10

*Verticordia multicostata* A. Adams, 1862: 224.

Synonym:

*Verticordia (Haliris) moeshimaensis* Habe, 1953: 133.

MATERIAL EXAMINED. — **Philippines.** MUSORSTOM 2: stn 33, 13°32' N, 121°07.5' E, 130-137 m, 5 v.

**New Caledonia.** "Vauban" 1978-79: stn 2, 22°17' S, 167°14' E, 425-430 m, 7 v. — Stn 40, 22°30' S, 166°24' E, 250-350 m, 5 v.

DISTRIBUTION. — Western Pacific, New Caledonia, the Philippines, South and East China Sea to Honshu, Japan, in 50-450 m.

DESCRIPTION. — *Shell* small, inflated, cordiform. Inequilateral, with anterior, prosogyrate umbones and strongly developed, shallow lunule. Sculpture of rounded, imbricated or nodulose radial riblets and numerous fine granules.

Lithodesma thin, lamelliform. *Right valve* with a stout conical cardinal tooth and a lateral ridge under posterodorsal margin. Interior of valves subnacreous. Inner shell margin regularly crenulate. Length: 6.9 mm.

*Haliris teporis* sp. nov.

(Figs 11-14)

TYPE MATERIAL. — Holotype live taken, MNHN.

TYPE LOCALITY. — New Caledonia, "Vauban" 1978-79, stn 3, 22°17' S, 167°12' E, 390 m.

MATERIAL EXAMINED. — Only known from the type material.

DISTRIBUTION. — Only known from the type locality.

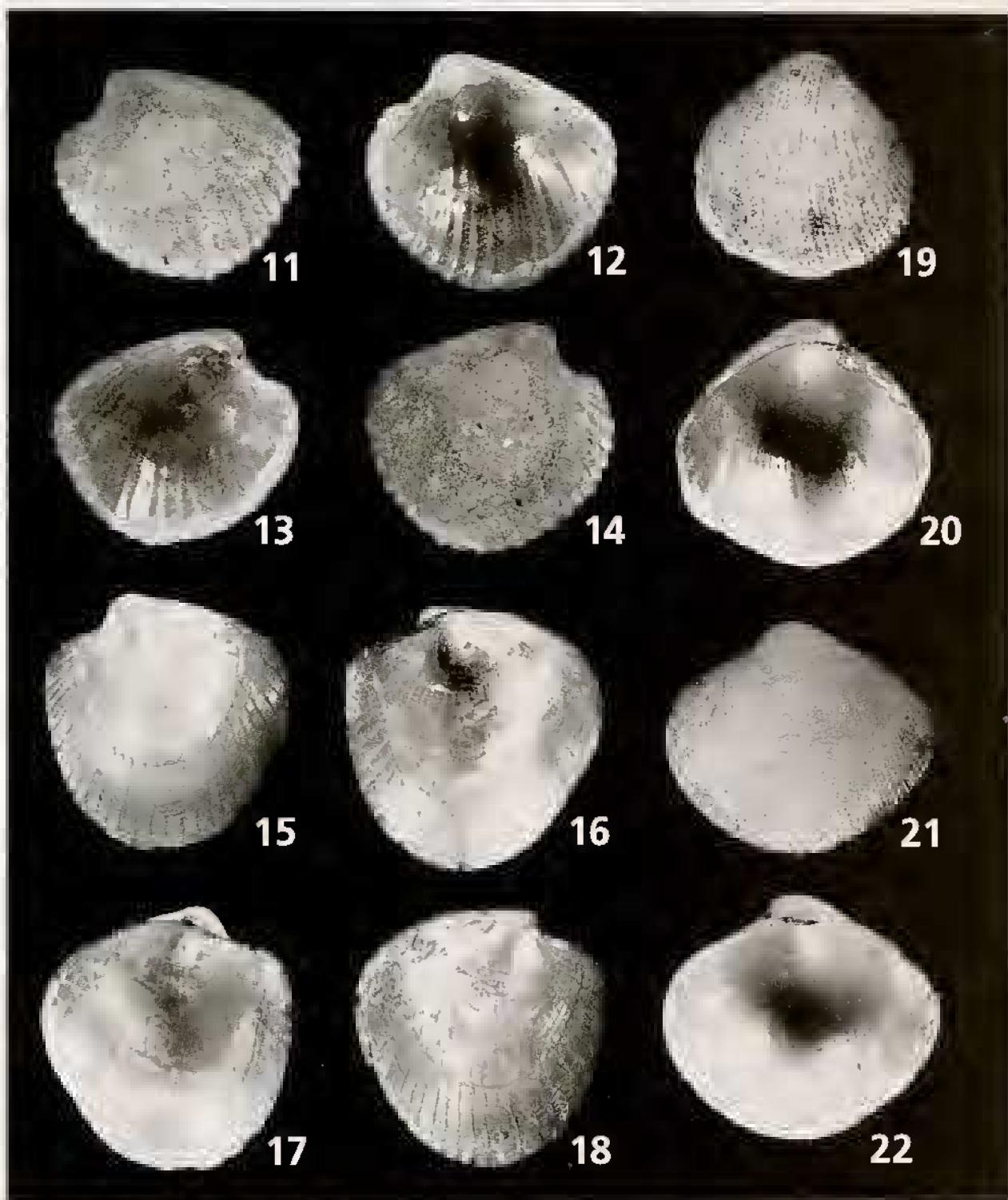
DESCRIPTION. — *Shell* minute, oval subquadrate, rather compressed, inequilateral. Umbones prosogyrate, not prominent, situated at approximately anterior one third of shell length. Slightly inequivale, left valve somewhat deeper and larger, overlapping a little the opposite valve along margins. Anterodorsal margin short, a little depressed along lunule, somewhat curled up to meet the rounded anterior and ventral margins. Posterodorsal margin elongate, oblique and feebly convex, forming a blunt angle with the broadly arcuate posterior margin. Sculpture of about 25 delicate radial riblets; riblets and interspaces covered with tiny prickly granules. Lunule small, relatively deep. Periostracum adherent, leuconous, pale straw in colour, extending somewhat over the

inner shell margin. Internal ligament reinforced by a lithodesma, subquadrate in outline with slightly produced posterior angles. *Right valve* with a conical cardinal tooth and an obscure lateral ridge under the posterodorsal margin. Hinge of *left valve* edentate, with a small subumbonal indentation to fit the opposite tooth. Interior polished, subnacreous, with radial furrows and inner margin crenulations corresponding to outer radial sculpture.

Measurements: Length 3.0 mm, height 2.8 mm, inflation 2.0 mm. The single specimen consists of a set of valves with its lithodesma. The soft parts were sent to F. R. Bernard, but are now missing.

REMARKS. — This small species is distinct in outline from *H. multicostata*, which also occurs in New Caledonia, and the delicate radial riblets of its outer surface are characteristic.

ETYMOLOGY. — The specific name alludes to the habitat of the species. It is derived from the Latin *tepor*, meaning lukewarm.



Figs 11-22. — 11-14, Verticordiidae: *Haliris teporis* sp. nov., "Vauban" 1978-79: stn 3, holotype, L = 3.0 mm, exterior of left valve (11), interior of right valve (12), interior of left valve (13), exterior of right valve (14). — 15-18, Lyonsiellidae: *Polycordia olivacea* sp. nov., CORINDON: stn 231, holotype, L = 15.3 mm, exterior of left valve (15), interior of right valve (16), interior of left valve (17), exterior of right valve (18). — 19-22, Euciroidae — 19-20, *Euciroa crassa*, MUSORSTOM 2: stn 68, L = 12.3 mm, exterior of right valve (19), L = 14.1 mm, interior of left valve (20). — 21-22, *Euciroa millegenimata*, MUSORSTOM 2: stn 19, L = 15.3 mm, exterior of left valve (21), interior of right valve (22).

*Halicardia houbricki* sp. nov.

Figs 3-6

TYPE MATERIAL. — Holotype empty shell, USNM 239020.

TYPE LOCALITY. — Northeastern Borneo, "Albatross", stn 5582, 4°19.9' N, 118°58.6' E, 1628 m.

MATERIAL EXAMINED. — Only known from the type material.

DISTRIBUTION. — Only known from the type locality.

DESCRIPTION. — Shell large, solid, inflated, nearly as long as high, irregularly trigonal in outline. Inequilateral, with the anterior half of disc ventrally expanded and an alate, somewhat compressed laterally, posterodorsal slope. Lunule small, deeply impressed, overhung posteriorly by the umbones, more developed in right valve. Umbones prosogyrate, inflated and moderately prominent, in front of midlength of shell. Right valve tending to overlap the opposite valve, a little along posterodorsal margin, more evidently on lunular area, making the shell slightly inequivalve. External sculpture of six strong radial undulations that scallop ventral margin, and numerous, narrow, unequal radiating grooves. Concentric growth marks well impressed, giving a finely decussate effect with the radial elements. Outer shell surface covered with densely set small granules. Periostracum thin, adherent, light beige in colour, slightly thicker on periphery of shell and somewhat reinforcing the radiating grooves. External ligament a long, narrow brown band stretching along posterodorsal and lunular margins. Internal ligament opisthodetic,

leaving in each valve a trigonal, elongate groove pointing obliquely under umbo. Lithodesma large, asymmetrical. Hinge feeble, nearly edentate; left valve slightly protruding on middle of posterodorsal margin; cardinal tubercle of right valve obsolete, reduced to a faint ridge of lunular margin under umbo. Inner side of shell pearly white, smooth, largely scalloped by the exterior radial undulations. Anterior adductor scar distinct, semilunar, bordered internally by a slight thickening of shell. Posterior adductor scar a little larger, less impressed, roughly subquadrate, with a short dorsal expansion corresponding to posterior pedal retractor scar. Anterior retractor scar deeply impressed, globular, hooked ventrally, situated beneath lunular margin. Umbonal cavity with a very small, ovate muscle scar under resilifer. Pallial line narrow, not indented by a sinus, remote from ventral margin.

Measurements: Length 34.6 mm, height 35.3 mm, inflation 28.8 mm. The single specimen consists of a set of valves in fresh condition. The lithodesma is unfortunately now missing, but was observed by F. R. Bernard.

REMARKS. — The new species closely resembles the North Eastern Pacific *H. perplicata* (Dall, 1890) but is readily distinguished by the straighter posterodorsal margin, the proportionately larger lithodesma, the smaller dental tubercle of the right valve and the much finer surface granulations.

It is very distinct from the three other Recent *Halicardia* species previously known from the North Pacific area: *H. nipponensis* Okutani, 1957, from Japan, and *H. gouldi* Dall, Bartsch & Rehder, 1938, from Hawaii, are characterized by radial flexures rather than distinct ribs; *H. philippinensis* Poutiers, 1981, from the central Philippines, has a slender, much thinner shell with delicate external sculpture.

ETYMOLOGY. — The species is named in honour of the late Dr R. S. Houbrick of the Smithsonian Institution, Washington, DC for his numerous and valuable contributions to malacology.

*Halicardia philippinensis* Poutiers, 1981

Figs 81-82

*Halicardia philippinensis* Poutiers, 1981: 353, textfig. 6, pl. 4, figs 7-8.

MATERIAL EXAMINED. — Philippines. MUSORSTOM 1: stn 44, 13°46.5' N, 120°29.5' E, 592-610 m, 1 spm (holotype), 2 spms, 1 db (paratypes) (MNHN).

DISTRIBUTION. — Only known from the Central Philippines, in 592-610 m.

**DESCRIPTION.** — *Shell* inflated, brittle, higher than long, subequivalve, roughly trigonal in outline. Inequilateral, ventral margin anteriorly expanded, posterodorsal margin somewhat alate. Sculpture reduced, with a shallow depression radiating to the slight sinuosity of posteroventral margin, and with numerous radial grooves and densely set small granules. Internal ligament opisthodetic, leaving in each valve a long

and narrow oblique groove. Lithodesma large, horseshoe-shaped, with pointed posterior lobes. Right valve with a posteriorly recurved cardinal tooth. Left valve edentate. Interior nacreous, with the external sculpture showing through posteriorly. Inner shell margins sharp and smooth. Length: 21.3 mm.

**REMARKS.** — *Halicardia philippinensis* is closely related to the Hawaiian species *H. gouldi* Dall, Bartsch & Rehder, 1938. However, it differs from the latter by the higher shape with more rounded outline, a posterodorsal expansion more weakly demarcated from disk, and an evenly convex anterior margin, not flattened or depressed in the middle.

#### Family LYONSELLIDAE

##### *Policordia olivacea* Poutiers, sp. nov.

Figs 15-18

**TYPE MATERIAL.** — Holotype live taken, MNHN.

**TYPE LOCALITY.** — Indonesia. CORINDON, stn 231, 0°04.9' N, 119°47.8' E, 980-1080 m.

**MATERIAL EXAMINED.** — Only known from the type material.

**DISTRIBUTION.** — Only known from the type locality.

**DESCRIPTION.** — *Shell* brittle, trapezoidal, rather compressed. Inequivalve, with a flexuous commissural plane and a slightly larger but less inflated right valve. Inequilateral, umbones anterior, prosogyrate, not very prominent. Anterodorsal margin rather short, abruptly curved; posterodorsal margin long, slightly convex. Ventral margin forming a narrowly rounded expansion. Posterior slope set off by a slightly depressed radial undulation. Sculpture of 34-39 fine radial striae with raised periostracal fringes, and many concentric lines forming fine lirae on lateral slopes. Shell translucent, whitish, with an oily iridescence, covered with a thin adherent periostracum, pale olive-brown in colour. Hinge margin thin, edentate, only slightly protruding under and behind umbo of left valve. Anterodorsal margin covered in both valves with a thickened outgrow of periostracum. Ligament opisthodetic, with a strong, bifid, recurved lithodesma, obliquely inserted under posterodorsal margin of valves. Interior nacreous, with the external sculpture showing through. Attachment scars obscure.

**Anatomy:** Adductor muscles ovate, subequal, the posterior one slightly larger. Mantle rather solid, marginally thickened,

extensively fused, with a small pedal opening. Entire free edge of each mantle lobe with a series of squat sensory tubercles. Exhalant opening with lateral tissue pads and five unbranched conical tentacles, three dorsally and two apart ventrally. Inhalant aperture larger, with an extensive raptorial hood, surrounded on either side by ten prominent, partially fused tentacles. These are branched into seven lobes and densely covered with microscopic pointed papillae. Two additional pairs of small, simple, conical tentacles inserted obliquely on outer edge of the ring of inhalant tentacles, one pair in the interstices between the fourth and fifth tentacles, and another pair between the sixth and seventh ones. Septum thin and delicate; gills with inner and outer demibranch, the ascending lamella of the outer demibranch absent. Gill filaments short. Foot small, rather tongue-shaped, with a byssal groove but no trace of a functional byssus. Mouth large, with overhanging lips; labial palps small.

**Measurements:** Length 15.3 mm, height 15.8 mm, inflation 9.2 mm. The single specimen consists of a set of valves with preserved soft parts. The lithodesma is now missing, but was observed by F. R. Bernard.

**REMARKS.** — This new species shows marked similarities with *Policordia densicostata* (Locard, 1898) of the subtropical Atlantic, a rather variable form, difficult to separate from *P. gemma* (Verrill, 1880) and *P. atlantica* Allen & Turner, 1974 on shell characters alone. Considering there were some doubt about the relationships between these three species, F. R. Bernard postulated that a variable complex is represented in the Atlantic, and tentatively assigned the CORINDON specimen to *P. densicostata*. However, after an examination of Locard's type specimen in MNHN, and the study of material assigned to *P. densicostata* by ALLEN & TURNER (1974: 478), I cannot agree with the opinion of Bernard and consider the CORINDON specimen a distinct species [J.-M. P.].

*Policordia olivacea* differs from *P. densicostata* by its compressed shell (length/inflation ratio 1.66 instead of 1.30), a more protruding ventral margin giving a somewhat trigonal outline, less prominent umbones, and a more conspicuous, light olive-brown periostracum (tenuous and pale grey to beige in *P. densicostata*). On anatomical grounds, both species are easily distinguishable by the mantle free margins (devoid of tubercles in *P. densicostata*) and the tentacles surrounding the inhalant aperture (*P. densicostata* has two more branched tentacles but no additional simple tentacles on their outer edge).

*Policordia olivacea* has a general resemblance to the West Pacific *P. pilula* (see PRASHAD, 1932 for description and illustration of the shell), a much smaller, differently shaped species. It is likely that *P. media* Okutani, 1962, is identical to *P. pilula*.

**ETYMOLOGY.** — The specific name is derived from the Latin *oliva*, olive, with reference to the colour and oily iridescence of the new species.

#### Family EUCIROIDAE

##### *Euciroa crassa* Thiele & Jaeckel, 1931

Figs 19-20

*Euciroa crassa* Thiele & Jaeckel, 1931: 248, pl. 10, fig. 130.

Synonym:

*Euciroa cistagamma* Kuroda, 1952: 14, pl. 1, figs 16-18.

**MATERIAL EXAMINED.** — **Philippines.** MUSORSTOM 2: stn 2, 14°00.5' N, 120°17.3' E, 184-186 m, 1 v. — Stn 6, 13°56.5' N, 120°21.5' E, 136-152 m, 1 v. — Stn 10, 14°00.7' N, 120°18.2' E, 188-195 m, 1 v. — Stn 17, 14°00.5' N, 120°17.8' E, 174-193 m, 1 v. — Stn 26, 13°49' N, 120°50.3' E, 299-320 m, 5 v. — Stn 51, 13°59.8' N, 120°17' E, 170-187 m, 5 v. — Stn 64, 14°00.8' N, 120°18.6' E, 191-195 m, 1 v. — Stn 68, 14°01.2' N, 120°18.2' E, 195-199 m, 4 v. — Stn 71, 14°00.6' N, 120°18.5' E, 189-197 m, 1 v. — Stn 72, 14°00.4' N, 120°18.6' E, 182-197 m, 1 v.

**DISTRIBUTION.** — Indo-Pacific, off East Africa, Maldives area, the Philippines, South and East China Sea to Honshu, Japan, in 136-1463 m.

**DESCRIPTION.** — Shell thick, rather small; umbones prominent. Outline variable but generally rounded-triangular. Inequilateral, post-umbonal part of shell short, truncate. Sculpture of numerous, nodulated or dorsally imbricated radial riblets, set closer on the posterior slope, which is set off by two shallow radial sulci. Primary riblets rather strong, with weaker intercalated riblets. Ligament opisthodetic, in a

deep resilifer. Lithodesma strong, rectangular, with two short posterior lobes. Right valve with a sturdy cardinal tooth. Left valve with an anterior tubercle and a weak, remote posterior lateral tooth. Interior nacreous, with a radial ridge running from the umbonal cavity to the posteroventral margin. Inner shell margins crenulate. Length 19.2 mm.

##### *Euciroa eburnea* (Wood-Mason & Alcock, 1891)

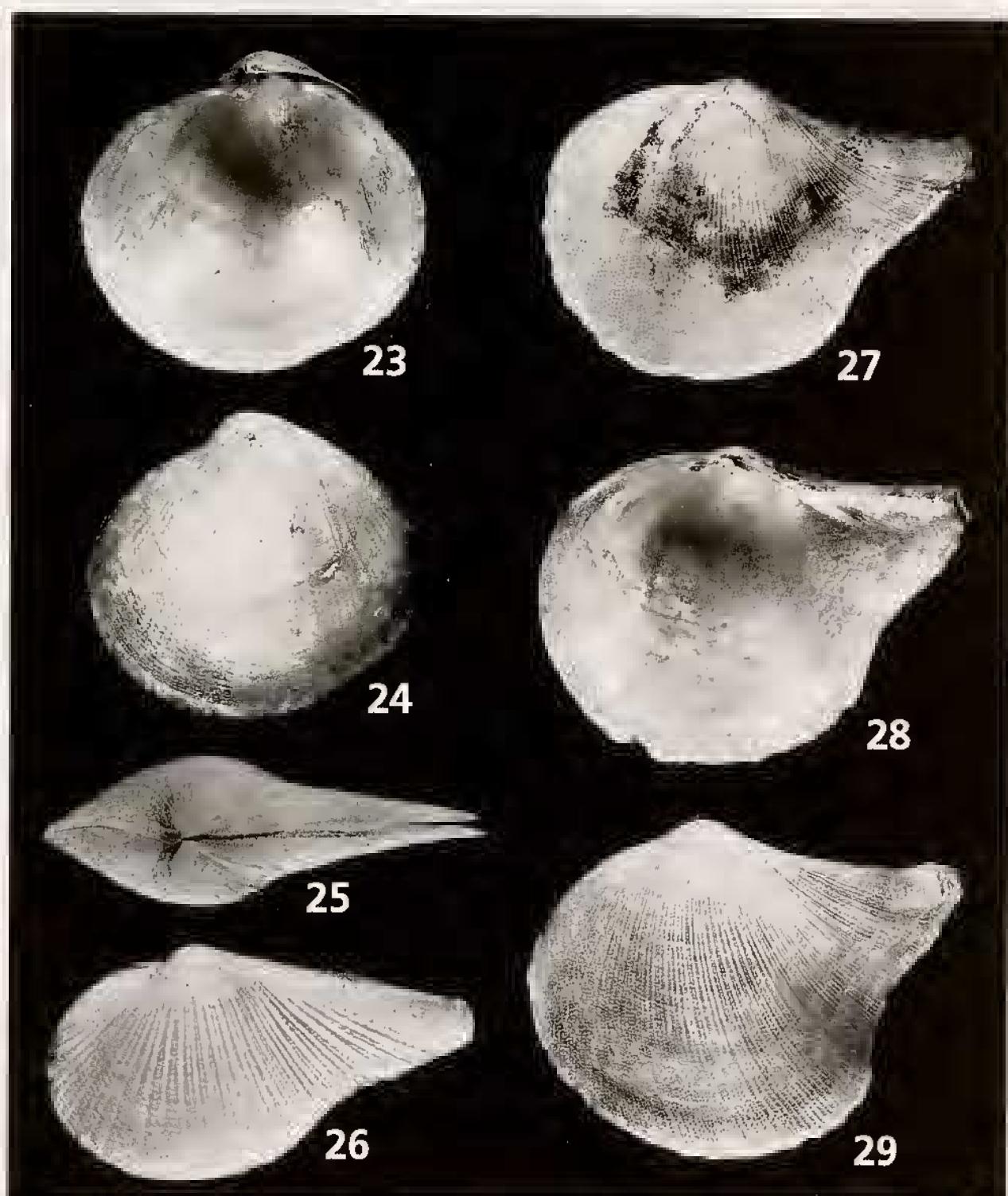
Figs 23-24

*Verticordia (Euciroa) eburnea* Wood-Mason & Alcock, 1891: 447, figs 14a-d.

Synonyms:

*Verticordia optima* G.B. Sowerby III, 1894a: 39, pl. 5, fig. 3; 1894b: 82.  
*Euciroa dalli* Pilsbry, 1911: 523.

**MATERIAL EXAMINED.** — **Philippines.** MUSORSTOM 1: stn 44, 13°46.5' N, 120°29.5' E, 592-610 m, 1 db. — Stn 47, 13°41.5' N, 120°30' E, 685-757 m, 5 spms.



Figs 23-29. — Euciroidae — 23-24, *Euciroea eburnea*, MUSORSTOM 2: stn 79. L = 38.6 mm, interior of right valve (23), exterior of left valve (24). — 25-29, *Acreuciroea rostrata*, MUSORSTOM 2: stn 75: 25-26, L = 32.8 mm (juvenile specimen): dorsal view of shell (25), exterior of left valve (26); 27-28, L = 61.4 mm (mature specimen): exterior of left valve (27), interior of right valve (28); 29, L = 63.5 mm (gerontic form): exterior of left valve.

MUSORSTOM 2: stn 50, 13°37.4' N, 120°33' E, 810-820 m, 1 v. — Stn 79, 13°44' N, 120°31.7' E, 682-770 m, 3 spms, 1 db, 10 v. — Stn 82, 13°47' N, 120°28.8' E, 550 m, 1 spm.

New Caledonia. "Vauban" 1978-79: stn 15, 22°49' S, 167°12' E, 390-395 m, 1 v.

**DISTRIBUTION.** — Widely distributed in the Indo-Pacific region, from South Africa and the Gulf of Aden to the Philippines, the South China Sea and New Caledonia, in 340-1473 m.

**DESCRIPTION.** — *Shell* rounded-ovate, subequivalve, with umbones somewhat in front of midlength. Posterior slope set off by shallow radial sulus. Sculpture of weak radial cords with rows of small spines and numerous microscopic nodules. Ligament opisthodetic, in a deep resilifer. Lithodesma long, slightly bifurcated. *Right valve* with a strong conical cardinal tooth, articulating in a pit of the opposite valve, and a shallow lateral ridge behind the resilifer. *Left valve* with anterior and posterior dorsal margins each produced in a tooth-like ridge, and with a small cardinal tooth edging the resilifer. Interior of shell brilliantly nacreous, with minute radial striae. Inner ventral margin finely crenulated. Length 38.6 mm.

**Anatomy:** Adductor muscles subequal. Mantle with large pedal opening, three-lobed, but lobes narrow. Ventral half of mantle much thickened. Taenioid muscles absent. Margins of pedal opening with minute erect spicules. Pallial apertures not developed into siphons, placed in a muscular plate, consisting of a small rounded exhalant aperture and a narrow

fissure for the inhalant aperture. The apertures are surrounded by a row of simple conical tentacles. Foot laterally compressed, pointed, without a byssal groove. Gills appressed to the septum. Outer demibranch apparently with ascending lamella only. Mouth broad, overhung by the lips that are produced into lateral bulbs, the "lateral sacs" of DALL (1895b). Ventrally is a tongue-like process, the "central posterior lappet" of DALL. A similar structure has been reported in *Lyonsiella formosa* by ALLEN & TURNER (1974) and is probably connected with adaptations to macrophagy. A similar appendage is also present in *Pholadomya candida* (MORTON, 1980). Labial palps long and prominent, similar to those of *Pholadomya* (MORTON, 1980). Oesophagus developed. Stomach large and globular. Two ducts to the digestive diverticula. Mid-gut and style-sac conjoined. Rectum probably penetrating the heart and passing over the posterior adductor muscle. Anus not projecting. Hermaphroditic, with superficial, arborescent testis.

**REMARKS.** — This species is closely related to *Euciroa pacifica* (Dall, 1895b) from Hawaii. The presence of some preserved specimens (MUSORSTOM 1: Stn 47) allowed the elucidation of the gross anatomy and comparison with DALL's (1895b) description of the Hawaiian species.

*Euciroa eburnea* shows a number of interesting similarities to the Verticordiidae and the Poromyidae. The presence of large labial palps separates it at family level. It shows a number of adaptations to macrophagy, but lacks any vestige of the "valvular membrane" associated with the inhalant siphon which can be extruded as a raptorial hood (MORTON, 1981b, 1985a, c). It is difficult to visualize how the minute inhalant fissure could be readily expanded, but the thickening of the mantle margins containing haemocoels and numerous muscle fibres may play a role. Mechanism of predation in *Euciroa* could be similar to the method supposedly used by verticordiids to capture bottom living preys (MORTON, 1987).

### *Euciroa millegemmata* Kuroda & Habe, 1952

Figs 21-22

*Euciroa millegemmata* Kuroda & Habe in Kuroda, 1952: 14-15 (footnote 1 a), pl. 1, figs 12-15.

**MATERIAL EXAMINED.** — **Philippines.** MUSORSTOM 2: stn 19, 14°00.6' N, 120°17.4' E, 189-192 m, 1 spm. — Stn 32, 13°40.5' N, 120°54' E, 192-220 m, 1 spm.

**DISTRIBUTION.** — Limited to Western Pacific area, the Philippines and China Sea to Honshu, Japan, in 100-365 m.

**DESCRIPTION.** — *Shell* small, ovate, inflated. Inequivalve, right valve deeper. Anterior margin rounded, posterior margin slightly produced, obtusely angulate. Sculpture of numerous, fine narrow radial striae and rows of pustules or spines. Lunule deep, small. Ligament opisthodetic, in a deep resilifer. Lithodesma robust, with two pointed posterior

lobes. *Right valve* with a small, conical cardinal tooth and a shallow posterior lateral ridge merged into shell margin; anterodorsal margin somewhat thickened internally. Dorsal margins of *left valve* slightly produced anteriorly and posteriorly. Interior of shell nacreous, with fine radial striae. Length 17.5 mm.

**REMARKS.** — This species has been placed without explanation in *Acreuciroa* by BERNARD *et al.* (1993).

*Euciroa trapeza* Poutiers, 1982

Figs 79-80

*Euciroa trapeza* Poutiers, 1982: 332-333, figs 1-2.

**MATERIAL EXAMINED.** — **New Caledonia.** "Vauban" 1978-79: stn 14, 22°16' S, 167°17' E, 465-495 m, 6 v, fragments. — Stn 33, 22°33' S, 166°25' E, 290-350 m, 2 db (holotype). — Stn 34, 22°32' S, 166°26' E, 350-420 m, 4 v. — Stn 39, 22°29' S, 166°23' E, 375-550 m, 1db, 6 v. — Stn 40, 22°30' S, 166°24' E, 250-350 m, 7 v. All paratypes: AMS, MNHN, NMNZ, NSMT.

**DISTRIBUTION.** — West Pacific, off southern New Caledonia, in 250-550m.

**DESCRIPTION.** — *Shell* large, inflated, subequivalve, transversally elongated. Inequilateral, anterior margin broadly rounded, posterior margin rostrate, obtusely angulated and strongly sloping dorsally. Sculpture of thin radial threads fading out ventrally and posteriorly, and numerous irregular rows of small prickly granules. Ligament opisthodetic, in a deep resilifer. Lithodesma not known. *Right valve* with a

strong conical cardinal tooth, articulating in a recess of the opposite valve, and a shallow lateral ridge behind the resilifer. *Left valve* with anterior and posterior dorsal margins each produced in a lateral ridge, and a weak tubercle in front of the resilifer. Interior of shell brilliantly nacreous, finely striated on margins. Length 58.0 mm.

*Acreuciroa rostrata* (Thiele & Jaeckel, 1931)

Figs 25-29

*Euciroa (Acreuciroa) rostrata* Thiele & Jaeckel, 1931: 249, pl. 10, figs 132-132a.

Synonym:

*Euciroa (Acreuciroa) teramachii* Kuroda, 1952: 15, figs 19-20.

**MATERIAL EXAMINED.** — **Philippines.** MUSORSTOM 1: stn 42, 13°54.5' N, 120°29' E, 379-407 m, 1 db. — Stn 43, 13°50' N, 120°28' E, 448-484 m, 1 db. MUSORSTOM 2: stn 15, 13°55' N, 120°28.9' E, 326-330 m, 1 v. — Stn 75, 13°51.9' N, 120°30.1' E, 300-330 m, 4 spms, 4 db, 18 v. — Stn 78, 13°49.5' N, 120°28.5' E, 441-550 m, 2 v. — Stn 82, 13°47' N, 120°28.8' E, 550 m, 2 v. — Stn 83, 13°55.9' N, 120°30.5' E, 318-320 m, 4 v.

**DISTRIBUTION.** — From Indonesia to the Philippines, South and East China Sea to Honshu, Japan, in 200-550 m.

**DESCRIPTION.** — *Shell* large, rounded-ovate, with a well-developed posterior rostrum. Sculpture of numerous, spinose, intercalating radial riblets, tending to be more prominent towards the anterior end of rostrum. Ligament opisthodetic,

broad, strong, heart-shaped. *Right valve* with a strong cardinal tooth and a posterior lateral lamina. *Left valve* edentate. Interior richly iridescent, finely striate on margins. Length 66.8 mm.

**REMARKS.** — The juveniles tend to be more elongate (POUTIERS, 1981; TSUCHIDA, 1986). Following HABE (1977, 1981) and ABBOTT & DANCE (1982), the posteriorly produced *Acreuciroa* is here considered a separate genus, distinct from the ovate and inflated species of *Euciroa* s. s.

## Family CUSPIDARIIDAE

*Cuspidaria convexa* Pelseneer, 1911

Figs 30-31

*Cuspidaria convexa* Pelseneer, 1911: 80, pl. 26, fig. 10.

Other reference.

*Cuspidaria (Cuspidaria) convexa* — PRASHAD, 1932: 329, pl. 7, figs 36-37.

MATERIAL EXAMINED. — **Philippines.** MUSORSTOM 1: stn 5, 14°01.5' N., 120°22' E., 200-215 m., 1 spm.  
 MUSORSTOM 2: stn 49, 13°38.8' N., 121°43.2' E., 416-425 m., 1 db.

DISTRIBUTION. — Western Pacific area, East of Java, the Central Philippines and South China Sea, in 100-694 m.

DESCRIPTION. — Shell globular, thin and white, slightly inequivalve, with a deeper left valve. Umbones prominent, anteriorly situated; postumbonal part equals about 60% of shell length. Anterior side of valves rounded, posterior drawn out in a short, wide rostrum, poorly marked off from disc by shallow radial depression. Posteroventral area of rostrum with a few indistinct radial threads. Sculpture of irregular concent-

ric striae; surface with mucus-bound mud layer. Resilifer a narrow, opisthoglyrate groove almost parallel to dorsal margin and not protruding under the hinge. Right valve with a trigonal, elongate, prominent posterior lateral tooth. Left valve edentate. Interior of shell milky white, glossy. Length 12.3 mm.

REMARKS. — This species is very similar to the Indian Ocean *C. approximata* E. A. Smith, 1896, but KNUDSEN (1967: 309) gave anatomical reasons to distinguish them. In *C. approximata*, the concentric sculpture is said to be thinner, the rostrum seems to be more ventrally placed and has a distinct ridge radiating from umbo to posteroventral end of shell. However, some of these characters may be mutable, and nothing is known about the individual variation of shell in the two species.

*Cuspidaria convexa* is compared by PRASHAD to his *C. mitis*, a less globular and more elongate species with less protruding umbones.

*Cuspidaria corrugata* Prashad, 1932

Figs 32-33

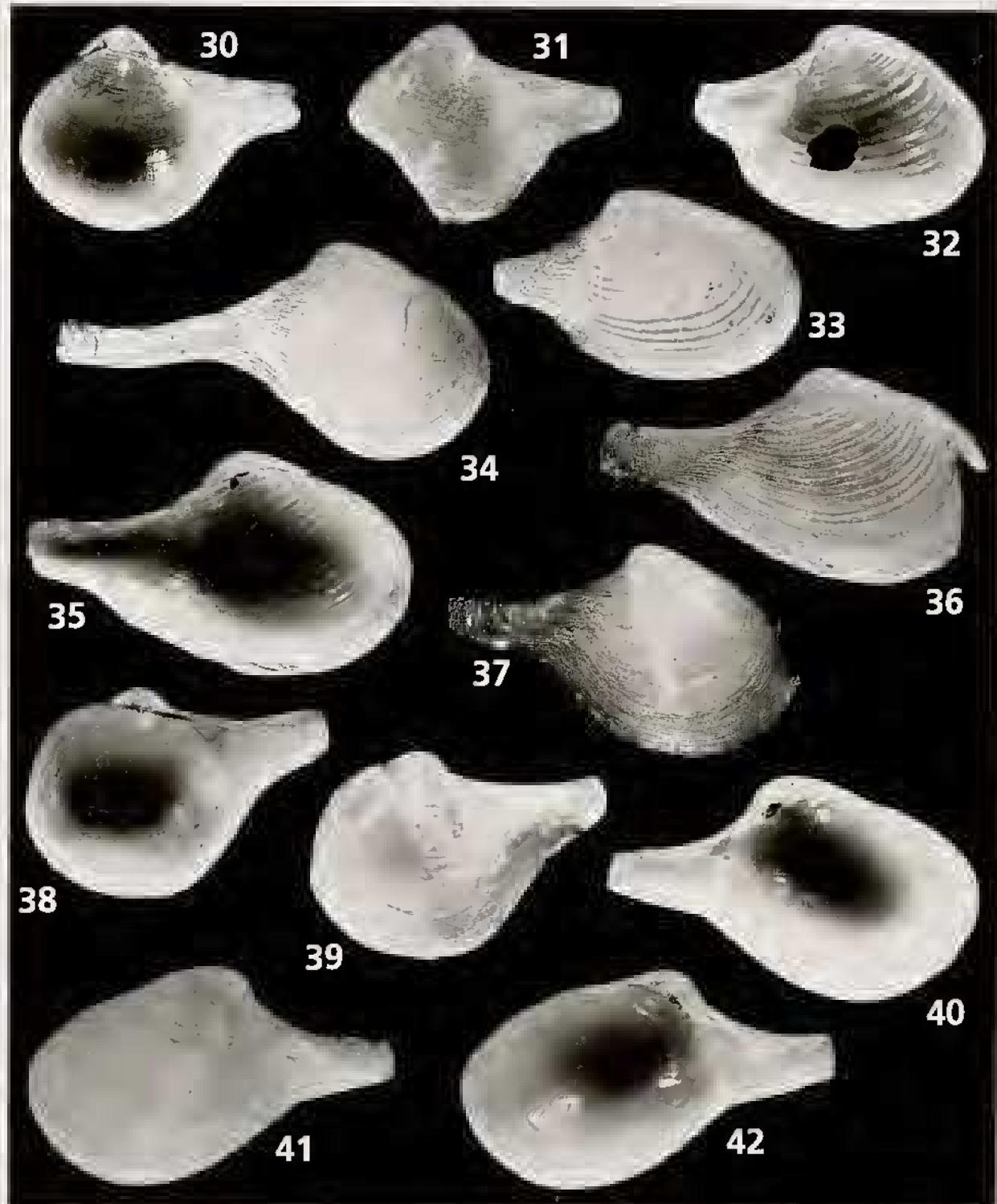
*Cuspidaria (Cuspidaria) corrugata* Prashad, 1932: 329, pl. 7, fig. 38.

MATERIAL EXAMINED. — **Philippines.** MUSORSTOM 2: stn 26, 13°49' N., 120°50.3' E., 299-320 m., 1 db. — Stn 72, 14°00.4' N., 120°18.6' E., 182-197 m., 1 v. — Stn 80, 13°45.2' N., 120°37.5' E., 178-205 m., 2 v.

DISTRIBUTION. — Western Pacific, Indonesia and the Philippines, in 38-320 m.

DESCRIPTION. — Shell thin, ovate, shortly rostrate posteriorly. Umbones not elevated, a little behind midlength of shell. Dorsal margin strongly sloping on either side of umbones. Ventral margin arcuate, curving up sharply in its posterior half. Rostrum short, subcentral, tapered, with a truncale end, set off by a broad radial depression that also produces a sinuous ventral margin. Sculpture of strong concentric riblets with wide interspaces, more regularly placed anteriorly, somewhat sinuous and lamellose posteriorly. Concentric riblets ending on rostrum along a strong

oblique ridge radiating from umbones to the posteroventral margin. Posteroventral area of rostrum crowded with very fine concentric threads, with a second, lower radial ridge bordering dorsal margin of shell. Internal ligament opisthoglyrate, in a narrow, oblique resilifer that is not produced. Left valve edentate. Posterior denticle of right valve obsolete. Posterior adductor scar well impressed, roughly trigonal, bordered on umbonal margin by an internal reinforcement of shell. Anterior adductor scar indistinct. Inner surface with concentric undulations. Length 17.3 mm.



Figs 30-42. — Cuspidariidae. — 30-31, *Cuspidaria convexa*, MUSORSTOM 2: stn 49, L = 12.3 mm, interior of right valve (30), exterior of left valve (31). — 32-33, *Cuspidaria corrugata*, MUSORSTOM 2: stn 80, L = 16.5 mm, interior of left valve (32), L = 17.3 mm, exterior of right valve (33). — 34, *Cuspidaria gigantea*, MUSORSTOM 2: stn 10, L = 33.7 mm, exterior of right valve. — 35-36, *Cuspidaria hindsiana*, MUSORSTOM 1: stn 71, L = 22.0 mm, interior of left valve (35), exterior of right valve (36). — 37, *Cuspidaria japonica*, MUSORSTOM 2: stn 11, L = 27.7 mm, exterior of right valve. — 38-39, *Cuspidaria kyushuensis*, MUSORSTOM 2: stn 25, L = 12.7 mm, interior of right valve (38), exterior of left valve (39). — 40-42, *Cuspidaria morrisae* sp. nov., "Vauban" 1978-79: stn 42, holotype, L = 20.0 mm, interior of left valve (40), exterior of left valve (41), interior of right valve (42).

**REMARKS.** — The present material agrees well with PRASHAD's original description, although his figure of the outside of shell shows a somewhat more centrally placed umbo and more irregular concentric sculpture. However, the shape of MUSORSTOM 2 valves is rather variable, and these differences may represent individual variation. Prashad did not describe nor figure the hinge, stating only it is "as in typical *Cuspidaria*", but in the right valves described here, the posterior tooth is indistinct.

*Cuspidaria gigantea* Prashad, 1932

Fig. 34

*Cuspidaria (Cuspidaria) gigantea* Prashad, 1932: 329, pl. 7, fig. 38.

Synonym:

*Cuspidaria kawamurai* Kuroda, 1948: 11, pl. 1, fig. 4.

**MATERIAL EXAMINED.** — **Philippines.** MUSORSTOM 1: stn 71, 14°09.5' N, 120°26.5' E, 174-204 m, 1 spm.

MUSORSTOM 2: stn 10, 14°00.7' N, 120°18.2' E, 188-195 m, 1 v. — Stn 26, 13°49' N, 120°50.3' E, 299-320 m, 1 v. — Stn 51, 13°59.8' N, 120°17' E, 170-187 m, 2 v.

**DISTRIBUTION.** — Indo-Pacific, from Southeast Africa to the Philippines, South and East China Sea to Honshu, Japan, in 100-1030 m.

**DESCRIPTION.** — *Shell* solid, subequivalve, oblique ovate, strongly rostrate, very inequilateral. Umbones not prominent, feebly opisthogyrate. Rostrum long, narrow, usually recurved, set off from disc by a broad radial depression that deeply sinuates the ventral shell margin. Rostrum with an inflated ridge radiating from umbones to the posterodorsal margin, giving the appearance of an elongate escutcheon.

Sculpture of a concentric striation, becoming coarse and irregular posteriorly in the depressed area of the posteroventral sinuation. Periostracum thick, dehiscent. Internal ligament reinforced by a lithodesma, in vertical trigonal resilifer that is strongly protruded under hinge margin. Right valve with a strong posterior lateral tooth. Left valve edentate. Interior of shell with fine radial striae. Length 33.7 mm.

**REMARKS.** — KNUDSEN (1967: 314) synonymized *Cuspidaria kawamurai* with *C. gigantea*, but used Kuroda's name on the basis that the specific name *gigantea* was preoccupied by VERRILL (1884). BARNARD (1964: 579) also mentioned this homonymy, but did not give any replacement name for *C. gigantea* Prashad. However, VERRILL's species was described under *Neaera*, and actually belongs to *Myonera* (VERRILL & BUSH, 1898). Thus, the secondary homonymy detected by BARNARD and KNUDSEN doesn't exist any more, and the specific name *C. gigantea* Prashad, 1932 remains.

*Cuspidaria hindsiana* (A. Adams, 1864)

Figs 35-36

*Neaera hindsiana* A. Adams, 1864: 207.

**MATERIAL EXAMINED.** — **Philippines.** MUSORSTOM 1: stn 71, 14°09.5' N, 120°26.5' E, 174-204 m, 1 spm.

**DISTRIBUTION.** — Northwestern Pacific, the Philippines, East China Sea to Taiwan and Honshu, Japan, in 50-200 m.

**DESCRIPTION.** — *Shell* thin and white, inflated, elongate-ovate, with a narrow central recurved rostrum. Ventral margin broadly convex, with a weak posterior constriction at base of rostrum. Sculpture of thin, irregular sharp concentric

ridges, and many very fine growth lines. Rostrum with numerous transverse grooves and a few indistinct radial threads. Periostracum thin, adherent, translucent. Internal ligament with broad lithodesma, attached in each valve to a

trigonal resilifer that is inclined posteriorly. Hinge of *right valve* with a strong, elongate, trigonal posterior lateral tooth.

*Left valve* edentate. Interior of shell with outer concentric ribbing showing through. Length 22.0 mm.

### *Cuspidaria japonica* Kuroda, 1948

Fig. 37

*Cuspidaria japonica* Kuroda, 1948: 14, pl. 1, fig. 2.

MATERIAL EXAMINED. — **Philippines.** MUSORSTOM 2: stn 11, 14°00.3' N, 120°19.3' E, 194-196 m, 1 v. — Stn 68, 14°01.2' N, 120°18.2' E, 195-199 m, 1 db.

DISTRIBUTION. — Northwest Pacific, from the Philippines to Honshu, Japan, in 100-200 m.

DESCRIPTION. — *Shell* rather large, globose-ovate, with a moderately developed, attenuate dorsal rostrum. Umbones submedian, inflated but not very prominent, slightly opisthogyrate. Anterodorsal margin broadly convex, oblique. Anterior and ventral margins rounded, the latter somewhat sinuate posteriorly. Posterodorsal margin straightish to a little recurved, gently sloping. Base of rostrum relatively broad, with weak radial depression ending in the postero-

ventral sinuosity of margin. Sculpture of irregular concentric striae, becoming coarser on rostrum. Periostracum thin, adherent, beige in colour, somewhat darker and fibrous on ventral margin and rostrum. Internal ligament reinforced by a short lithodesma, in a small pit under and behind the umbo. Hinge of *right valve* with a short posterior lateral tooth and a small internal thickening of margin in front of umbo. *Left valve* edentate. Interior of shell milky white. Length 27.7 mm.

REMARKS. — This species is similar to *C. lubangensis* Poutiers, 1981, from the Central Philippines, but the latter has a proportionately shorter rostrum, and more delicate hinge in the right valve.

### *Cuspidaria kyushuensis* Okutani, 1962

Figs 38-39

*Cuspidaria kyushuensis* Okutani, 1962: 35, pl. 3, fig. 12.

MATERIAL EXAMINED. — **Philippines.** MUSORSTOM 2: stn 25, 13°40' N, 120°43' E, 520-550 m, 1 db, 1 v.

DISTRIBUTION. — Northwest Pacific, from Kyushu, Japan, to the central Philippines, in 520-760 m.

DESCRIPTION. — *Shell* solid, globose, quadrangular-ovate, with a ventral enlargement and a rather short, compressed, slightly upturned rostrum. Inequivalve, left valve somewhat deeper and larger ventrally. Umbones small, inflated, anterior to midlength of shell. Sculpture of rather regular concentric lirae, disappearing on rostrum. Shell chalky white, with a feebly glowing olive-yellow periostracum. Internal ligament in a small, deep, oblique pit under umbo. *Right valve* with a

stout, trigonal posterior lateral tooth and a thickened anterior hinge margin. Hinge of *left valve* edentate. Interior of shell whitish, porcelaneous. Posterior adductor scar trigonal, deeply impressed. Anterior adductor scar elongate-ovate, with a small pedal retractor scar near its posterodorsal end. Pallial line hardly distinct, with a large sinus at base of rostrum. Length 12.7 mm.

REMARKS. — The present material agrees well with the short diagnosis and figure of *C. kyushuensis* given by OKUTANI (1962). Although he compared it with *C. circinata* (Jeffreys, 1876), it seems more closely related to the Atlantic *C. ventricosa* Verrill & Bush, 1898. In the latter species, however, the sculpture is coarser and more closely spaced, and the posterior lateral tooth is closer to the ligament pit.

*Cuspidaria lubangensis* Poutiers, 1981

Fig. 83

*Cuspidaria lubangensis* Poutiers, 1981: 348, pl. 3, figs 4-5.

MATERIAL EXAMINED. — **Philippines.** MUSORSTOM 1: stn 63, 14°00.5' N, 120°16' E, 191-195 m (holotype db, MNHN).

DISTRIBUTION. — Only known from the central Philippines, in 191-195 m.

DESCRIPTION. — *Shell* brittle, globose-ovate, with a moderately developed and rather broad dorsal rostrum. Umbones inflated, on midlength of valves, nearly orthogyrate. Anterior and ventral margins rounded, the former subangulate dorsally, the latter somewhat sinuate posteriorly. Posterodorsal margin concave, dorsally recurved towards posterior end. Base of rostrum with a shallow radial depression ending in the posteroventral sinuosity of margin. Sculpture of irregular,

concentric grooves and narrow wrinkles, the former more developed posteriorly. Periostracum beige to brown, adherent, fibrous, darker and coarser towards margins. Internal ligament fitting in an oblique resilifer that is slightly protruding under hinge margin. Hinge of right valve with a shallow posterior lateral tooth. Left valve edentate. Interior of shell bright white in colour. Length 19.5 mm.

REMARKS. — For comparison with *Cuspidaria japonica* Kuroda, 1948, see under that species.

*Cuspidaria macrorhynchus* E. A. Smith, 1895

Figs 43-44

*Cuspidaria macrorhynchus* E. A. Smith, 1895: 12, pl. 2, figs 5-5a.

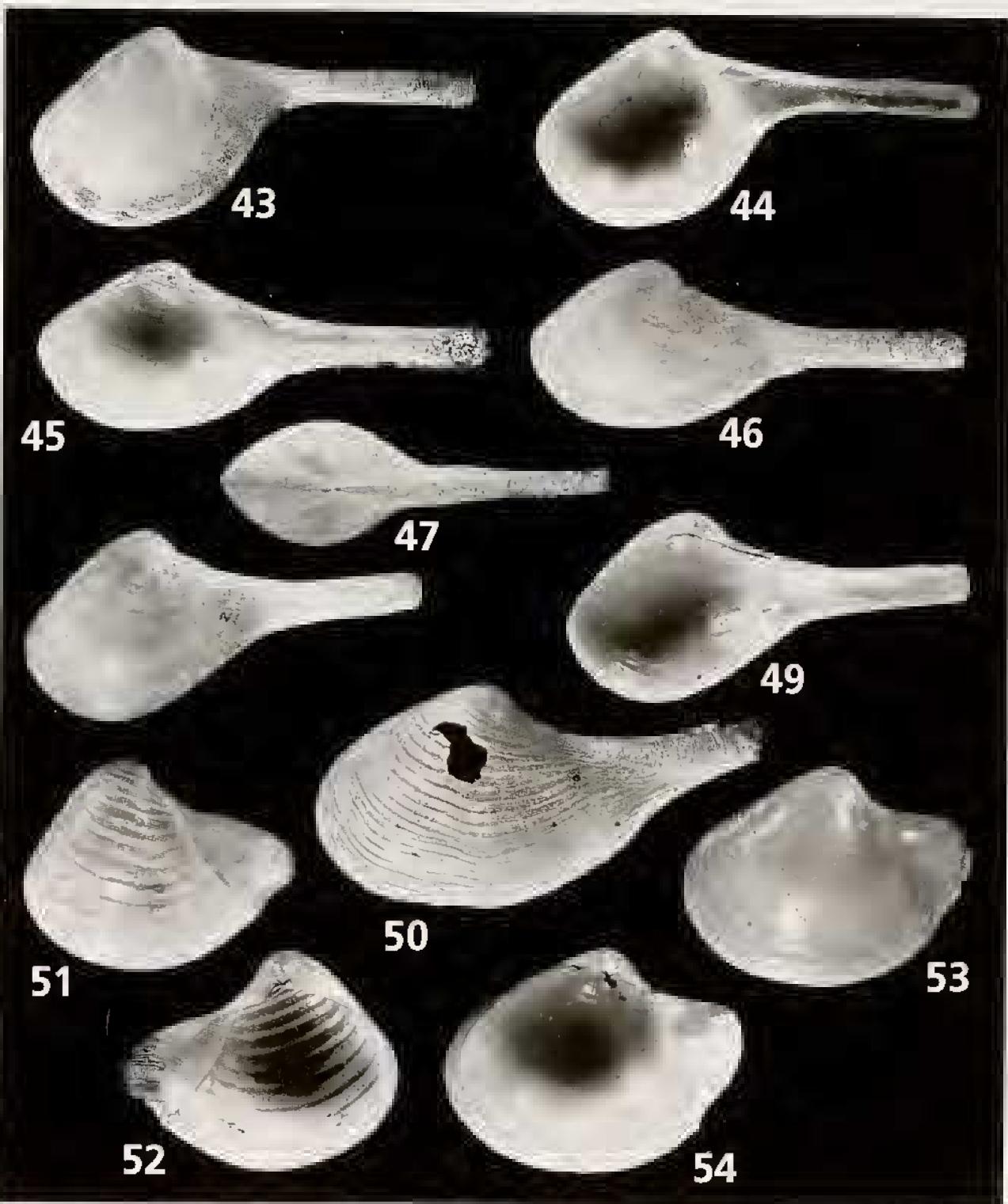
MATERIAL EXAMINED. — **Philippines.** MUSORSTOM 2: stn 39, 13°08' N, 122°36.3' E, 1030-1190 m, 8 v. — Stn 44, 13°23.5' N, 122°20.6' E, 760-820 m, 2 spms, 3 db.

DISTRIBUTION. — Indo-Pacific, from East Africa to Indonesia, the Philippines and China Sea, in 400-1190 m.

DESCRIPTION. — *Shell* thin, strongly inequilateral, ovate to slightly oblique with a very long and narrow, tube-like rostrum. Umbones prominent, in front of midlength of shell. Anterodorsal margin straight, horizontal, close to umbones, slightly convex and strongly sloping anteriorly. Anterior and ventral margins rounded, the latter deeply sinuate at base of rostrum. Posterodorsal margin straight, horizontal, sometimes slightly recurved distally. Sculpture of a fine irregular concentric striation, becoming coarser and transverse on posterodorsal area of rostrum. An obsolete diagonal ridge radiating from umbo to posteroventral extremity of rostrum.

Periostracum thin, pale ochre in colour, becoming thicker and darker on periphery of disc and particularly on rostrum. Internal ligament with a short lithodesma, attached in each valve to a minute, oblique resilifer, rounded ventrally and pointing under umbo. Right valve with a prominent posterior lateral tooth and an anterior lateral groove for the opposite valve margin. Left valve edentate. Interior of shell glossy white, with a very fine radial striation and one or two shallow longitudinal ridges in dorsal half of rostrum. Length 36.2 mm.

REMARKS. — The shell of this species is somewhat variable, and the rostrum tends to be relatively longer with a slightly recurved tip on older specimens. *Cuspidaria suganumai* Nomura, 1940, from Japan in 106-220 m, is usually synonymized with *C. macrorhynchus*, but has a shorter, proportionately wider rostrum and stronger dentition in the right valve. It is considered here as a valid species limited to Japan.



FIGS 43-54. — Cuspidariidae — 43-44, *Cuspidaria macrorhynchus*, MUSORSTOM 2: stn 44, L = 23.7 mm, exterior of left valve (43), interior of right valve (44). — 45-47, *Cuspidaria protatissima*, MUSORSTOM 2: stn 80, L = 23.9 mm, interior of right valve (45), exterior of left valve (46); L = 21.0 mm, dorsal view of shell (47). — 48-49, *Cuspidaria steindachneri*, MUSORSTOM 1: stn 63, L = 18.6 mm, exterior of left valve (48), interior of right valve (49). — 50, *Myonera (Rengea) caduca*, "Vauban" 1978-79: stn 42, L = 30.5 mm, exterior of left valve. — 51-52, *Myonera rostra* sp. nov., MUSORSTOM 2: stn 40, holotype. L = 13.4 mm, interior of left valve (51), exterior of left valve (52). — 53-54, *Myonera dautzenbergi*, CORINDON: stn 280, L = 18.4 mm, exterior of left valve (53), interior of right valve (54).

*Cuspidaria morrisae* sp. nov.

Figs 40-42

TYPE MATERIAL. — Holotype db, MNHN.

TYPE LOCALITY. — New Caledonia. "Vauban" 1978-79, stn 42, 22°08' S, 167°04' E, 230-260 m.

MATERIAL EXAMINED. — Known only from the type material.

DISTRIBUTION. — Known only from the type locality.

DESCRIPTION. — *Shell* solid, inflated, oblique ovate, inequilateral. Anterior side rounded, posterior side with a short central rostrum, relatively narrow, abruptly truncate distally. Inequivalve, left valve slightly deeper and commissural plane somewhat distorted ventrally, a little drawn out to the left anteriorly and to the right posteriorly. Umbones prominent, opisthogryrate, well behind midlength of shell, the postumbonal part forming about 42% of the total length. Anterodorsal margin elongate, oblique, broadly arcuate, meeting rounded anterior margin at an obtuse angle. Posterodorsal margin concave, gently sloping. Ventral margin rounded, becoming sinuous and oblique posteriorly. Rostrum laterally compressed, set off from disc by a radial depression, with a rounded

diagonal ridge running from umbo to the postero-ventral margin. Sculpture of numerous irregular concentric lines and grooves. Periostracum thin, translucent, yellow-ochre, stronger and folded ventrally. Internal ligament with broad, arched lithodesma, attached to a shallow oblique resilifer protruding a little beyond hinge margin. Hinge feeble. *Right valve* with an obscure posterior lateral tooth. *Left valve* edentate. Posterior adductor scar well impressed, kidney-shaped; anterior adductor scar indistinct. Interior of shell porcellaneous white, with fine radial striae.

Measurements: Length 20.0 mm, height 12.3 mm, inflation 9.8 mm. The single specimen consists of a set of valves in fresh condition.

REMARKS. — This new species can be compared to *C. capensis* (E. A. Smith, 1885) from the Southeast Atlantic, but the latter is rather more compressed, the umbones are less prominent, more anteriorly placed and not strongly opisthogryrate.

ETYMOLOGY. — The specific name is for Dr S. MORRIS formerly of the British Museum (Natural History) in recognition of abundant and cheerful assistance.

*Cuspidaria nobilis* (A. Adams, 1864)

Fig. 61

*Neaera nobilis* A. Adams, 1864: 207.

Synonym:

*Cuspidaria nobilis consimilis* Habe, 1961: 146 & App. 42, pl. 65, fig. 21.

MATERIAL EXAMINED. — **Philippines.** MUSORSTOM 2: stn 19, 14°00.6' N, 120°17.4' E, 189-192 m, 1 db. — Stn 21, 14°01.2' N, 120°17.6' E, 191-192 m, 1 v. — Stn 51, 13°59.8' N, 120°17' E, 170-187 m, 2 v. — Stn 59, 14°00.4' N, 120°17' E, 186-190 m, 1 v. — Stn 68, 14°01.2' N, 120°18.2' E, 195-199 m, 1 spm, 7 v. — Stn 71, 14°00.6' N, 120°18.5' E, 189-197 m, 1 v. — Stn 80, 13°45.2' N, 120°37.5' E, 178-205 m, 2 v.

**Indonesia.** CORINDON: stn 267, 1°56.6' S, 119°16.7' E, 134-186 m, 1 spm.

DISTRIBUTION. — Western Pacific, Indonesia, the Philippines, East China Sea to Honshu and Shikoku, Japan, in 50-300 m.

DESCRIPTION. — *Shell* large, inflated, inequilateral, elongate-ovate, with an attenuate, rostrate posterior end. Umbones inclined posteriorly, situated a little in front of midlength of shell. Anterodorsal margin convex, meeting

without discontinuity the rounded anterior margin. Rostrum large, ventral, truncate, with a weak angle radiating to posteroventral corner. Posterodorsal margin strongly recurved. Ventral margin areuate, a little sinuate posteriorly by a

faint radial groove at base of rostrum. Sculpture of many strong concentric ribs. Surface white, periostracum thin and yellowish, often becoming stronger and darker on rostrum. Resilifer broad, subvertical. *Right valve* with a low, triangular

posterior lateral tooth. *Left valve* edentate. Inner face of shell undulated by the outer concentric sculpture. Length 51.7 mm.

### *Cuspidaria prolatissima* Poutiers, 1981

Figs 45-47

*Cuspidaria prolatissima* Poutiers, 1981: 348, pl. 3, figs 2-3.

MATERIAL EXAMINED. — Philippines. MUSORSTOM 1: stn 25, 14°02.5' N, 120°22' E, 191-200 m, 1 spm. — Stn 31, 14°00' N, 120°17.5' E, 187-195 m, 1 spm. — Stn 42, 13°54.5' N, 120°29' E, 379-407 m, 2 spms (holotype and paratype).

MUSORSTOM 2: stn 17, 14°00.5' N, 120°17.8' E, 174-193 m, 1 spm. — Stn 21, 14°01.2' N, 120°17.6' E, 191-192 m, 2 spms. — Stn 26, 13°49' N, 120°50.3' E, 299-320 m, 1 spm. — Stn 51, 13°59.8' N, 120°17' E, 170-187 m, 1 v. — Stn 63, 14°07.3' N, 120°15.5' E, 215-230 m, 1 spm. — Stn 64, 14°00.8' N, 120°18.6' E, 191-195 m, 1 spm, 3 v. — Stn 68, 14°01.2' N, 120°18.2' E, 195-199 m, 2 spms. — Stn 80, 13°45.2' N, 120°37.5' E, 178-205 m, 2 spms, 1 v. — Stn 83, 13°55.9' N, 120°30.5' E, 318-320 m, 1 spm, 2 v.

DISTRIBUTION. — Fairly common in the central Philippines, in 170-407 m.

DESCRIPTION. — *Shell* equivalve, moderately inflated, elongate-ovate, with a long, narrow, straight rostrum, sometimes a little upturned posteriorly. Anterodorsal slope strongly depressed, set off by an oblique radial fold forming an angle at anterior end. Sculpture of numerous irregular concentric striae, becoming coarser and transverse on rostrum, and overlain by shallow concentric ribs on umbonal

and anterior parts of the disc. Rostrum demarcated by a radial sulcus, with a smooth dorsal margin and an umboventral ridge becoming indistinct posteriorly. Internal ligament in a small trigonal socket beneath and behind the umbo. Hinge plate narrow. *Right valve* with an elongate posterior lateral tooth. *Left valve* edentate. Length 26.7 mm.

REMARKS. — This elongate species is distinguished by the infolded area anterior to the umbo, rather like a large lunule, and the consequently acute anterior shell margin.

### *Cuspidaria steindachneri* Sturany, 1901

Figs 48-49

*Cuspidaria steindachneri* Sturany, 1901: 261, pl. 1, figs 5-9.

Synonym:

*Cuspidaria hirasei* Kuroda, 1948: 10, pl. 1, fig. 3.

MATERIAL EXAMINED. — Philippines. MUSORSTOM 1: stn 63, 14°00.5' N, 120°16' E, 191-195 m, 1 db.

DISTRIBUTION. — Indo-Pacific, Red Sea, Indian Ocean, the Philippines, South China Sea to Honshu, Japan, in 106-1308 m.

DESCRIPTION. — *Shell* solid, elongate-ovate, with a long, straight central rostrum. Umbones prominent, well anterior to midlength of shell. Anterodorsal margin oblique, slightly convex; posterodorsal margin concave. Ventral margin broadly rounded, with a posterior sinuation. Rostrum demarcated from disc by a shallow radial furrow. A fine ridge running from umbo to posteroventral extremity of rostrum, and becoming indistinct distally. Sculpture of irregular

concentric striae, coarser and recurved at a right angle on posterodorsal area of rostrum. Internal ligament in a narrow, oblique resilifer. *Right valve* with a strong posterior lateral tooth and a distinct internal thickening of the anterodorsal margin. *Left valve* edentate, hinge margin somewhat prominent anterior to umbo. Interior of shell with fine radial lines. Length 18.6 mm.

*Cuspidaria (Soyomya) clathrata* sp. nov.

Figs 62-65

**TYPE MATERIAL.** — Holotype paired valves with dried soft parts, MNHN.

**TYPE LOCALITY.** — New Caledonia. "Vauban" 1978-79, stn 42, 22°08' S, 167°04' E, 230-260 m.

**MATERIAL EXAMINED.** — Only known from the type material.

**DISTRIBUTION.** — Only known from the type locality.

**DESCRIPTION.** — *Shell* solid, ovate, laterally compressed, slightly inequivalve; posterior end with a short rostrum. Umbones not very prominent, slightly prosogyrate and submedian, the postumbonal part forming about 51% of shell length. Anterodorsal margin horizontal just anterior to umbones, gently convex and sloping towards rounded anterior margin. Posterodorsal margin oblique, straight, subtruncate posteriorly. Posterior truncation a little stronger on right valve. Ventral margin broadly rounded, somewhat flattened posteriorly. Rostrum broad, laterally compressed, largely merged with disc, set off only by a shallow radial depression that becomes less prominent ventrally. Surface with irregular feeble concentric lirae and oblique rows of shallow pustules in a divaricate pattern. Pustules developed on main part of

the disc, disappearing towards anterodorsal margin and on umbonal and rostral regions. Periostracum thin, adherent, translucent. Internal ligament light tan in colour, reinforced ventrally by a broad, subquadrate lithodesma, attached in each valve to a trigonal, posteriorly directed resilifer. Hinge of right valve with a strong, oblique posterior lateral tooth and a very small lamina just in front of resilifer. Left valve edentate. Inner side of shell shiny, milky white, with a shallow thickening in front of the posterior adductor scar and a number of thin unequal lines radiating from the umbonal cavity.

Measurements: Length 17.4 mm, height 12.5 mm, inflation 8.7 mm.

**REMARKS.** — The external oblique sculpture of the new species, recalling somewhat that of a *Strigilla* Turton, 1822, is highly distinctive and warrants separation of the taxon at the subgeneric level. It is here tentatively assigned to *Soyomya* Okutani, 1985, and is similar to *C. kurohiji* Okutani, 1972, from Japan, which is a more inflated species (inflation/length ratio 0.60-0.63, instead of 0.50 in *C. clathrata*), with more protruding umbones and a continuous sculpture resulting in a divaricate appearance.

**ETYMOLOGY.** — The specific name is derived from the Latin *clathratus*, latticed, with reference to the highly distinct sculpture.

*Halonympha leiomyooides* (Poutiers, 1981)

Figs 84-87

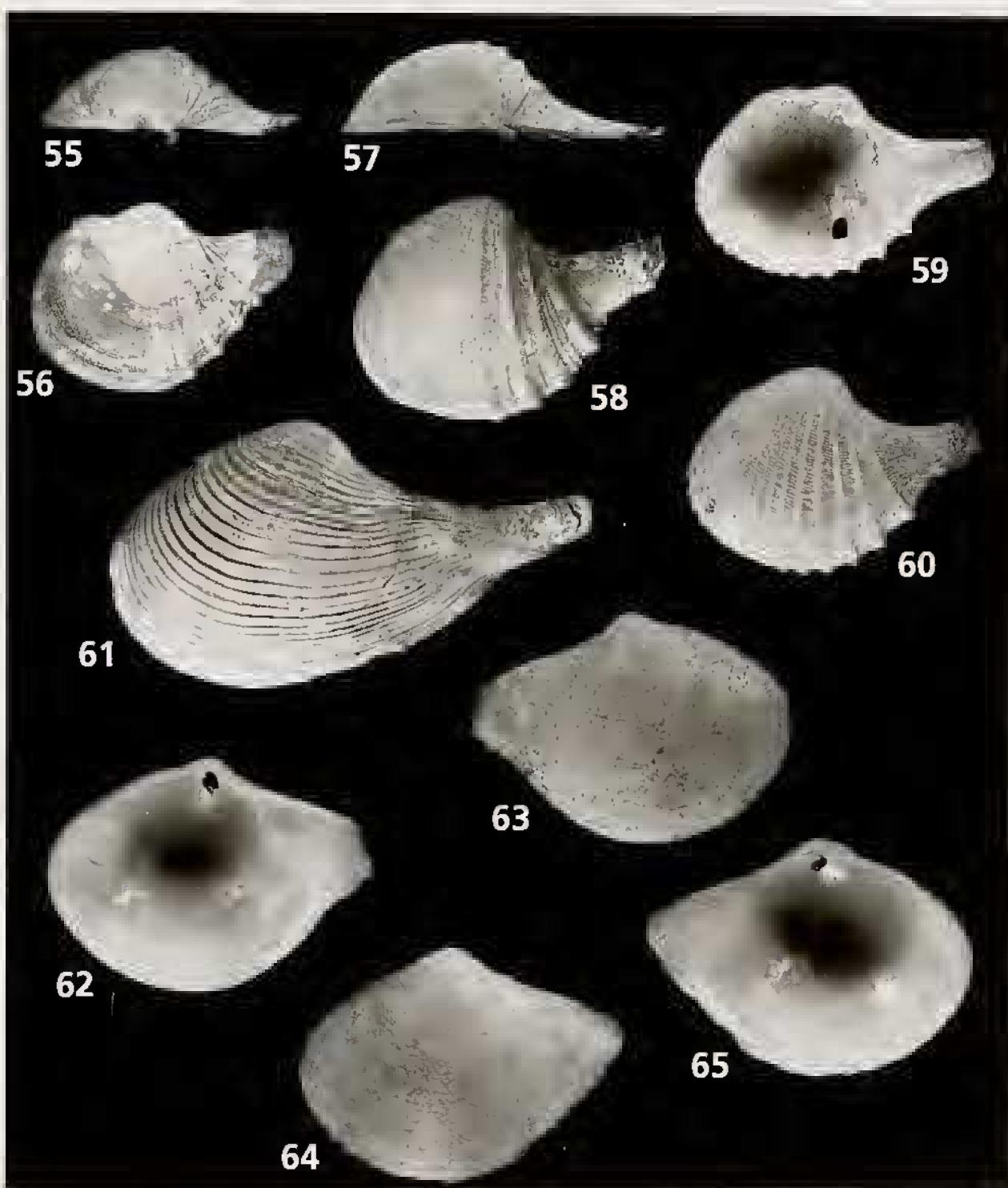
*Cuspidaria leiomyooides* Poutiers, 1981: 349-350, pl. 3, figs 6-7.

**MATERIAL EXAMINED.** — **Philippines.** MUSORSTOM 1: stn 50, 13°49' N, 120°02' E, 415-510 m, 1 db (holotype), 1 v (paratype) (MNHN).

**DISTRIBUTION.** — Only known from the type locality.

**DESCRIPTION.** — *Shell* globular, thin and translucent, whitish, equivalve. Inequilateral, rounded anteriorly and drawn out posteriorly in a short, trigonal blunt rostrum. Sculpture of low concentric ridges that are more densely set ventrally and fading out on posterior half of valves. Periostracum translucent and iridescent. Internal ligament fitting in each valve in an oblique, ventrally protruding resilifer. Right

valve with a posteriorly recurved anterior cardinal tooth, bordered on anterior and posterior dorsal margins by a faint lateral ridge. Left valve with a small pointed posterior lateral tooth. A raised oblique ridge under posterodorsal margin of each valve. Interior of shell shiny, with an irregular tiny granulation. Length 9.0 mm.



Figs 55-65. — Cuspidariidae. — 55-56, *Cardiomya (Kurodanya) fortisculpta*, Tosa Bay, Japan (MNHN, Coll. Staadt 1969), L = 13.1 mm, dorsal view of right valve (55), exterior of left valve (56). — 57-58, *Cardiomya alcocki*, MUSORSTOM 2: stn 25, L = 18.2 mm, dorsal view of right valve (57), exterior of left valve (58). — 59-60, *Cardiomya gouldiana*, MUSORSTOM 1: stn 58, L = 14.0 mm, interior of right valve (59), exterior of left valve (60). — 61, *Cuspidaria nobilis*, MUSORSTOM 2: stn 71, L = 51.7 mm, exterior of left valve. — 62-65, *Cuspidaria (Soyomya) clathrata* sp. nov., "Vauban" 1978-79: stn 42, holotype, L = 17.4 mm, interior of right valve (62), exterior of right valve (63), exterior of left valve (64), interior of left valve (65).

*Cardiomya alcocki* (E. A. Smith, 1894)

Figs 57-58

*Cuspidaria alcocki* E. A. Smith, 1894: 170, pl. 5, fig. 8.

Synonyms:

*Cuspidaria (Cardiomya) potti* Sturany, 1901: 264, pl. 1, figs 10-16.*Cuspidaria (Cardiomya) persculpta* Prashad, 1932: 332, pl. 7, fig. 44.*Cuspidaria (Cardiomya) multicarinata* Prashad, 1932: 332, pl. 7, figs 45-46.

MATERIAL EXAMINED. — **Philippines.** MUSORSTOM 2: stn 25, 13°39.5' N, 120°42.9' E, 520-550 m, 1 db.

**Indonesia.** CORINDON: stn 281, 1°59' S, 119°09.9' E, 715-800 m, 1 db.

DISTRIBUTION. — Indo-Pacific, Red Sea, northern Indian Ocean and Southeast Asia, in 60-1150 m.

DESCRIPTION. — Shell thin, fragile, ovate, inflated, subequivalve; left valve slightly larger, more inflated than right. Rostrum short, recurved, with obscure radial riblets. Sculpture of disc with radial riblets increasing in number towards ventral margin, and a few strong radial ribs on posterior

slope. Concentric ornamentation of numerous fine lirae. Resilifer narrow, subvertical. Right valve with a strong elongate posterior lateral tooth. Interior with main external ribbing showing through. Length 22.5 mm.

REMARKS. — *Cardiomya alcocki* is usually considered a rather variable species and exhibits a somewhat discrepant radial sculpture on the disc. KNUDSEN (1967), following MELVILL & STANDEN's (1907) suggestion, synonymized the Red Sea species *C. potti* under Smith's name. HABE (1964, 1977, 1981) merged with *C. alcocki* the Japanese *C. fortisculpta* (Kuroda, 1948) and the Southeast Asian *C. persculpta*, *C. multicarinata* and *C. semicostata* (all of Prashad, 1932). However, *C. fortisculpta*, erected as the type of subgenus *Kurodamya* by OKUTANI & SAKURAI (1964: 25), can be considered a valid species restricted to Japan. It is easily distinguishable from the above-mentioned forms by its sculpture being completely devoid of radial elements on the anterior slope, and by its especially short, strongly protruding posterior lateral tooth in the right valve. A specimen from Tosa Bay (Shikoku) is figured here for comparison (Figs 55-56). Following OKUTANI & SAKURAI (1964: 26), *C. semicostata* is a distinct species also referable to *Kurodamya*; it is characterized by its very short rostrum and radial sculpture restricted to the posterior third of shell.

*Cardiomya gouldiana* (Hinds, 1843)

Figs 59-60

*Neaera gouldiana* Hinds, 1843: 77.

Synonyms:

*Cuspidaria (Cardiomya) gouldiana septentrionalis* Kuroda, 1948: 18, pl. 2, fig. 12.*Cardiomya lindbergi* Scarlato, 1972: 125, figs 14-16.*Cardiomya lindbergi batialis* Scarlato, 1972: 126, figs 17-19.

MATERIAL EXAMINED. — **Philippines.** MUSORSTOM 1: stn 58, 13°58.5' N, 120°14' E, 143-178 m, 1 db.

DISTRIBUTION. — Indonesia, the Philippines, South China Sea, Yellow Sea and Japan Sea, in 13-1030 m.

**DESCRIPTION.** — *Shell* small, obliquely ovate, inequivalve; left valve somewhat larger, more inflated. Rostrum rather short, central, slightly recurved, with concentric lirae. Sculpture of a dozen or more strong, sharp radial ribs, slightly

more developed in the right valve. Interspaces of ribs with regular concentric lirae. Resilifer small. *Right valve* with a strong, triangular posterior lateral tooth. Length 14.0 mm.

**REMARKS.** — This species is similar to *C. singaporensis* (Hinds, 1843) but is proportionately thinner, with less tumid umboes and more delicate radial ridges.

*Myonera dautzenbergi* Prashad, 1932

Figs 53-54

*Myonera dautzenbergi* Prashad, 1932: 334, pl. 7, fig. 51.

**MATERIAL EXAMINED.** — **Philippines.** MUSORSTOM 2: stn 81, 13°35.3' N, 121° 01.3' E. 856-884 m, 4 spms.

**Indonesia.** CORINDON: stn 280, 1°59' S, 119°09.9' E, 715-800 m, 4 spms, 3 db, 3 v.

**DISTRIBUTION.** — Indo-Pacific, from southern Indonesia to the Philippines and Japan (OKUTANI, 1968, 1976), in 715-959 m.

**DESCRIPTION.** — *Shell* relatively large, thin, inflated ovate, inequilateral. Left valve slightly larger, deeper, overlapping right along ventral margin. Umboes prominent, incurved, pointing behind midlength of shell. Anterior margin rounded. Rostrum broad, short, slightly recurved dorsally, compressed, set off from disc by a well-marked radial fold. Sculpture of numerous fine concentric striae, some raised in low

undulations anteriorly. Surface of rostrum quite smooth. Periostracum adherent, straw-coloured, somewhat thickened towards margins, wrinkled on posterior end. Internal ligament oblique, with a thin lithodesma. Resilifer narrow, posteriorly directed. Interior of valves milky white, with the external sculpture showing through. Length 20.8 mm.

**REMARKS.** — This species has a somewhat variable outline and shows a slight allometry of growth, the height/length ratio tending to increase in large specimens.

Contrary to HABE's opinion (1981: 193, 195), *Myonera dautzenbergi* is not identical with *M. dispar* (Dall, Bartsch & Rehder, 1938), which has two radiating keels between the rostrum and the disc, and strong concentric undulations extending over the whole disc. Rather curiously, BERNARD *et al.* (1993: 118-119) repeated HABE's error and recorded *M. dautzenbergi* under two different generic names (namely *Cuspidaria* and *Myonera*). They also gave different synonymic and biogeographical data for these two denominations of the same species.

*Myonera rostra* sp. nov.

Figs 51-52

**TYPE MATERIAL.** — Holotype left valve, MNHN.

**TYPE LOCALITY.** — Philippines. MUSORSTOM 2, stn 40, 13°08' N, 122°40.2' E, 280-440 m.

**MATERIAL EXAMINED.** — Only known from the type material.

**DISTRIBUTION.** — Only known from the type locality.

**DESCRIPTION.** — *Shell* extremely thin, inflated, triangular, inequilateral, the postumbonal part forming about 60% of total length. Umbo large, rounded, prominent. Anterodorsal margin slightly convex, abruptly sloping towards the rounded anterior margin. Posterodorsal margin oblique, somewhat

flexuous. Ventral margin broadly convex, with a slight sinuosity on its rostral side. Rostrum broad, compressed, wedge-shaped, rounded posteriorly. Rostrum set off from disc by a strong, narrow radial ridge. Sculpture of the disc of strong, distant concentric ribs, fading out towards the

anterodorsal margin and extending posteriorly to the umbo-ventral ridge. Rostrum with a wide sulcus bordering the radial ridge, well marked towards the umbo, shallower near ventral margin. Surface of shell polished, with many fine concentric lines, translucent white under an adherent, straw-coloured periostracum. Hinge edentate, thin shelled, slightly upturned under the umbo, with a well-developed ligament in a long, narrow, oblique furrow. Interior of shell glossy, with the external sculpture showing through. Muscle scars indis-

tinct. Margins smooth, apart from the shallow flexure on ventral side of rostrum.

Measurements: Length 13.4 mm; height 10.9 mm; inflation (one valve) 4.8 mm. The single specimen consisted of a set of valves with remains of soft parts. The right valve was fragmented according to F. R. Bernard and has been subsequently lost, so that the description and measurements are based only on the remaining left valve.

**REMARKS.** — This new species is very similar to *M. garretti* Dall, 1908, and *M. mexicana* Knudsen, 1970, two closely related eastern Pacific species. However, both American species are devoid of the radial furrow bordering the umbo-ventral ridge of rostrum and are less inequilateral. *Myonera mexicana* is also more elongate, with a height/length ratio of 0.70 (*fide* KNUDSEN, 1970: 135) instead of 0.81 in the present species. In *M. garretti*, the concentric ribs do not reach the umbo-ventral ridge, are indistinct on the central part of the disc (as shown in BERNARD, 1974: pl. 19 fig. 1) and less numerous for a same shell length, whereas in *M. rostra* they are continuous and more numerous (about 24 in number instead of 15 in *M. garretti*).

*Myonera rostra* bears a general resemblance to *Cuspidaria undata* (Verrill, 1884) of the Atlantic and Indian oceans. However, the latter is easily distinguishable by a more rounded outline, hinge teeth on right valve (KNUDSEN, 1970: 137; POUTIERS, 1984: 288) and the absence of radial ridge between rostrum and disc.

The shell erroneously figured by HABE (1981: pl. 8, fig. 4) as *M. dautzenbergi* is in fact another species identical or very similar to *M. rostra*.

**ETYMOLOGY.** — The specific name alludes to the well-developed rostral side of the shell.

#### *Myonera (Rengea) caduca* (E. A. Smith, 1894)

Fig. 50

*Cuspidaria (Myonera) caduca* E. A. Smith, 1894: 170, pl. 5, figs 9-10.

Synonym:

*Myonera fluctuosa* Kuroda, 1948: 25, pl. 2, fig. 20.

**MATERIAL EXAMINED.** — New Caledonia. "Vauban" 1978-79: stn 42, 22°08' S, 167°04' E, 230-260 m, 1 v.

**DISTRIBUTION.** — Indo-Pacific, from Southeast Africa to New Caledonia and South China Sea to Honshu, Japan, in 50-1134 m.

**DESCRIPTION.** — Shell thin, white, inequilateral, elongate-ovate, with a long, broad, ventral, laterally compressed rostrum. Umbones not prominent, posteriorly inclined, in front of midlength of shell. Anterodorsal margin rounded, posterodorsal margin recurved. Ventral margin broadly arcuated, slightly sinuate posteriorly. Rostrum with two fine

ridges diverging from umbo to the truncate posterior end of shell. Sculpture of irregularly concentric ridges and lirae. Resilifer subvertical, protruding under umbo. Hinge feeble, edentate. Outer concentric wavy sculpture visible from the inner side of shell. Length 30.5 mm.

**REMARKS.** — BERNARD *et al.* (1993: 118-119) erroneously recorded *Myonera caduca* twice in their catalogue of the living marine bivalves of China; once under *Cuspidaria* and once under *Rengea*. Under these two denominations of the same species, they provided different bathymetric, substrate, and geographic distributional data.

## Family POROMYIDAE

*Poromya (Cetomya) butoni* (Prashad, 1932)

Figs 77-78

*Poromya (Cetoconcha) butoni* Prashad, 1932: 327, pl. 7, figs 33-34.

MATERIAL EXAMINED. — **Philippines**, MUSORSTOM 1: stn 26, 14°00' N, 120°17' E, 189 m, 1 spm. — Stn 31, 14°00' N, 120°17.5' E, 187-195 m, 1 db. — Stn 34, 13°59.5' N, 120° 17.5' E, 188-191 m, 1 db. — Stn 61, 14°01' N, 120°17.5' E, 124-129 m, 1 db. — Stn 72, 14°12.5' N, 120°29' E, 122-127 m, 1 spm. — Stn 73, 14°16' N 120°31.5' E, 70-76 m, 1 db. MUSORSTOM 2: stn 19, 14°00.6' N, 120°17.4' E, 189-192 m, 1 spm, 1 db. — Stn 26, 13°49' N, 120°50.3' E, 299-320 m, 1 db. — Stn 59, 14°00.4' N, 120°17' E, 186-190 m, 1 spm. — Stn 72, 14°00.4' N, 120°18.6' E, 182-197 m, 1 v.

DISTRIBUTION. — Western Pacific, Indonesia and the Philippines, in 70-535 m.

DESCRIPTION. — Shell rather small, whitish to hyaline, inequilateral, slightly rostrate, subtruncate posteriorly. Inequivalve, right valve somewhat overlapping left at margins. Umbones prominent, situated in front of midlength of shell. Surface iridescent, sculpture of many rows of minute granu-

les, mostly retained on shell periphery. Ligament mainly external, stretching along posterodorsal margin. Hinge feeble, a little strengthened under umbones, completely edentate in both valves. Interior glossy, with faint concentric growth undulations. Length 13.0 mm.

REMARKS. — *Poromya butoni* is completely edentate and has no trace of a cardinal tooth in right valve. The observation [by J.-M. P.] of the soft parts of a preserved specimen in MNHN (MUSORSTOM 1; stn 26) has shown that, in this species, the septum has two pairs of ostial openings. Then, *P. butoni* is not a *Cetoconcha* and instead belongs in the subgenus *Cetomya*. This doesn't bring *P. (Cetomya) butoni* in secondary homonymy with *P. (Dermatomya) buttoni* (Dall, 1916b) under Article 58 of the Code of Nomenclature (dealing with single or double consonants), because the two names are evidently not of the same origin and meaning: the epithet *butoni* is derived from Buton Strait, Banda Sea (the type locality of Prashad's species); the eastern Pacific *buttoni*, is named in honour of Mr Fred. L. BUTTON, as indicated by DALL (1900a: 321; 1916a: 5, 22). Thus, Article 57f is applicable, and the two names are not homonyms.

*Poromya (Cetomya) eximia* (Pelseneer, 1911)

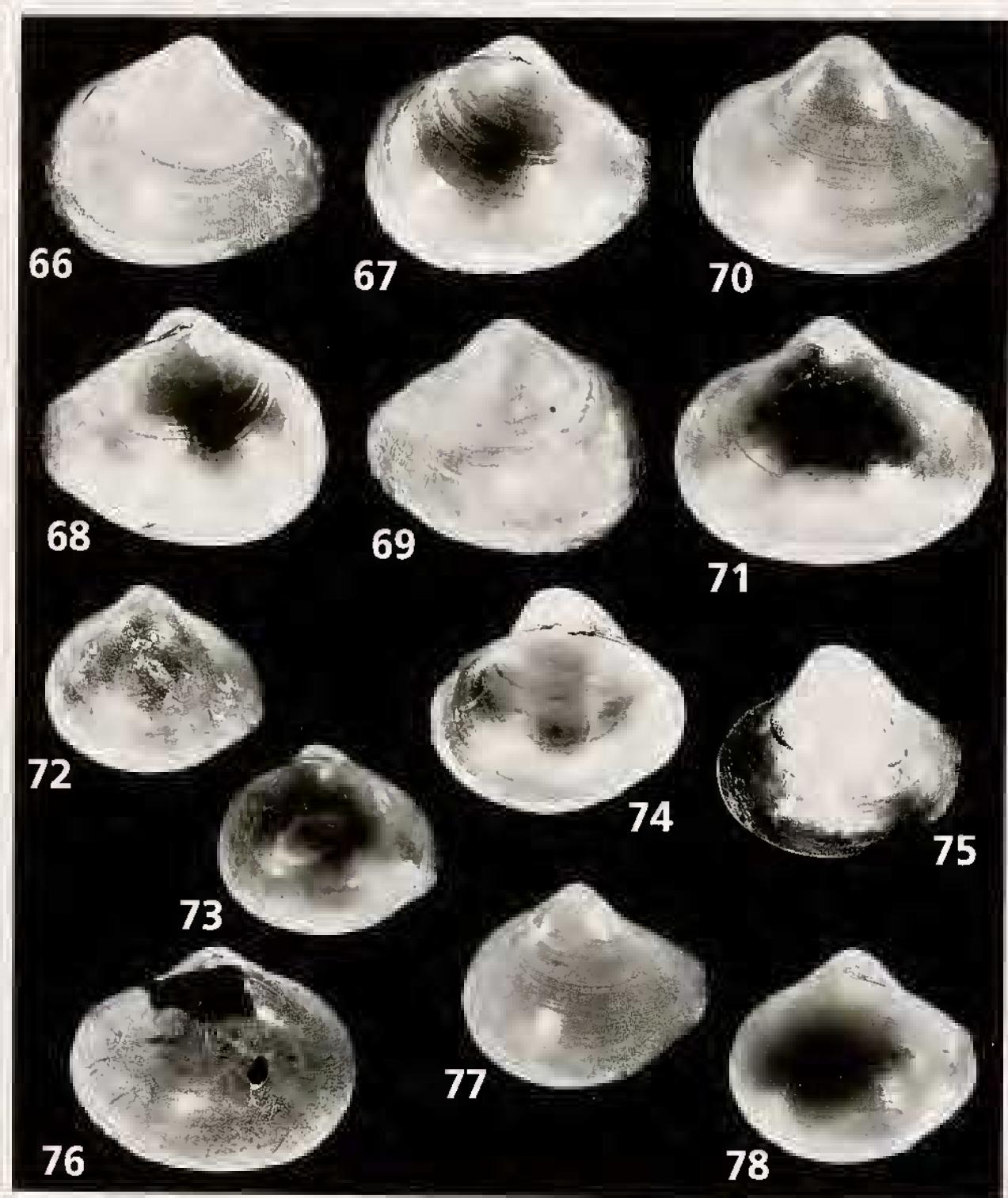
Figs 74-75

*Poromya eximia* Pelseneer, 1911: 78, pl. 26, figs 3-4.

Others references:

*Poromya (Cetoconcha) eximia* — PRASHAD, 1932: 327, pl. 7, figs 31-32.  
*Cetoconcha (eximia var?) intermedia* — HABE, 1952b: 158, pl. 21, figs 18-19.

MATERIAL EXAMINED. — **Philippines**. MUSORSTOM 1: stn 50, 13°49' N, 120°02' E, 415-510 m, 1 v. MUSORSTOM 2: stn 25, 13°39.5' N, 120°42.9' E, 520-550 m, 3 spms. — Stn 39, 13°08' N, 122°36.3' E, 1030-1190 m, 1 spm. — Stn 44, 13°23.5' N, 122°20.6' E, 760-820 m, 1 db, 2 v. — Stn 46, 13°26.2' N, 122°17.3' E, 445-520 m, 1 db. — Stn 75, 13°51.9' N, 120°30.1' E, 300-330 m, 1 v. — Stn 78, 13°49.5' N, 120°28.5' E, 441-550 m, 2 spms. — Stn 82, 13°47' N, 120°28.8' E, 550 m, 1 v.



Figs 66-78. — Poromyidae. — 66-69, *Cetoconcha boucheti* sp. nov., MUSORSTOM 2: stn 75, holotype. L = 17.7 mm, exterior of left valve (66), interior of right valve (67), interior of left valve (68), exterior of right valve (69). — 70-71, *Cetoconcha gloriosa*, CORINDON: stn 208, L = 21.1 mm, exterior of left valve (70), interior of right valve (71). — 72-73, *Cetoconcha exigua* sp. nov., MUSORSTOM 2: stn 56, holotype, L = 6.0 mm, exterior of left valve (72), interior of right valve (73). — 74-75, *Poromya (Cetomya) eximia*, MUSORSTOM 2: stn 25, L = 15.4 mm, interior of right valve (74), exterior of left valve (75). — 76, *Cetoconcha japonica*, "Vauban" 1978-79: stn 9, L = 7.9 mm, exterior of right valve. — 77-78, *Poromya (Cetomya) butoni*, MUSORSTOM 1: stn 26, L = 11.0 mm, exterior of left valve (77), interior of right valve (78).

**DISTRIBUTION.** — Indo-Pacific, off East Africa, Flores Sea, the Philippines and South China Sea to Honshu, Japan, in 300-1190 m. *Poromya intermedia* (Habe, 1952) is said to be a local form of this species, living in Japan in 50-200 m.

**DESCRIPTION.** — Shell inequilateral, highly inflated, rhomboidal-ovate, with a short, broad posterior rostration. Right valve slightly overlapping left along ventral and posterodorsal margins. Umbones much inflated, prominent, strongly incurved, prosogyrate. Posterior side laterally compressed, with a shallow, indistinct depression radiating from umbo to posteroventral margin, where it appears as a faint sinus. A small ridge, more distinct on the right valve, extending along posterodorsal margin. Sculpture of concent-

ric growth lines and striae, and easily eroded radial rows of granules, most developed posteriorly. Shell whitish under a pale dull brown periostracum, becoming irregularly wrinkled posteroventrally. Ligament short, visible from the outside. Hinge margin narrow, slightly upturned, thickened under umbones. Left valve edentate. Cardinal tubercle of right valve reduced to absent. Interior of shell pearly white, smooth, with a rounded ridge corresponding to the eternal umbonoventral depression. Length 15.7 mm.

**REMARKS.** — This species is well characterized by its plump shape and broad posterior rostration. It is somewhat variable in outline and hinge features, with a more or less expanded posterior rostration and a sometimes completely edentate right valve.

Contrary to the opinion of BERNARD *et al.* (1993), which followed that of PRASHAD (1932) and HABE (1952b, 1977, 1981), *P. eximia* cannot belong to *Cetoconcha*, as it has only two pairs of septal openings with crossed filaments and interfilaments. Those features of the septum, investigated by PELSENEER (1911: 78) and KNUDSEN (1967: 305), have been also observed on a dried specimen of the present material (MUSORSTOM 2: stn 25). Considering its ligament and hinge characters, *P. eximia* is best referred to the subgenus *Cetomya*.

#### *Cetoconcha boucheti* sp. nov.

Figs 66-69

**TYPE MATERIAL.** — Holotype db and 1 paratype v, MNHN.

**TYPE LOCALITY.** — Philippines. MUSORSTOM 2, stn 75, 13°51.9' N, 120°30.1' E, 300-330 m.

**MATERIAL EXAMINED.** — Only known from the type material.

**DISTRIBUTION.** — Only known from the type locality.

**DESCRIPTION.** — Shell thin, hyaline, inflated, trigonal-ovate, subequivalve, right valve slightly deeper. Strongly inequilateral, rounded anteriorly, produced and rostrate posteriorly. Umbones slightly prosogyrate, about midlength of shell, not very prominent. Anterodorsal margin oblique, regularly rounded; posterodorsal margin sloping, nearly straight, abruptly truncate at posterior end. Ventral margin broadly convex, a little more arcuate near the posterior truncation. Posterior slope of shell laterally compressed, giving a gently concave outline in dorsal view. Sculpture of concentric lines and striae, and of densely set pustules in irregular concentric and radial rows, most abundant near lateral and ventral margins. In addition, there is a fine

umbonoventral radial cord, reinforced by periostracial extensions near posteroventral shell margin. Outer surface oily iridescent. Periostracum adherent, light ochre in colour, becoming darker on periphery of valves. Ligament mainly external, long and narrow, supported by a small thickening of hinge margin under the umbones. Hinge feeble. Left valve edentate, with slightly protruding anterior and posterior margins. Right valve with a small, erect, cardinal denticle. Interior polished, iridescent, with minute radial striae and low concentric growth undulations. Muscle scars obscure.

Measurements: Length 17.7 mm, height 14.5 mm, inflation 11.3 mm.

**REMARKS.** — In the left valve of the holotype, a small transverse ridge can be seen on inner side of the anterodorsal margin, at about one-third the distance from umbo to the anterior end. This does not appear on the paratype, and must be considered merely as an individual variation.

From the other species of the genus, *C. boucheti* is distinguished by its characteristic outline recalling somewhat that of a *Macoma*, with rounded anterior half and asymmetrically attenuated posterior. It differs from *C. exigua* by its much larger size, a different posterior shape and more crowded rows of pustules.

**ETYMOLOGY.** — The specific epithet is named for Dr P. BOUCHET.

*Cetoconcha exigua* sp. nov.

Figs 72-73

TYPE MATERIAL. — Holotype paired valves with traces of dried soft parts, MNHN.

TYPE LOCALITY. — Philippines, MUSORSTOM 2, stn 56, 13°54.1' N, 119°56.7' E, 970 m.

MATERIAL EXAMINED. — Only known from the type material.

DISTRIBUTION. — Only known from the type locality.

DESCRIPTION. — *Shell* small, thin, hyaline, ovate, subtruncate posteriorly. Umbones prosogyrate, anterior to midlength of shell, prominent. Anterodorsal margin steeply sloping, evenly curved. Anterior and ventral margins rounded, the latter becoming somewhat flattened posteriorly. Posterodorsal margin oblique, shallowly curved, ending in a deep posterior truncation. Outer surface moderately inflated, with an obscure rounded keel extending from umbo to posteroventral end and delimiting a slightly depressed, triangular

posterior slope. Sculpture of radial rows of fine pustules, more prominent posteriorly. Periostracum tenuous but adherent, translucent, shiny pale yellow in colour. Ligament mainly external, long and narrow, supported by a small thickening of hinge margin under and behind the umbones. Hinge feeble, edentate in *left valve*, with a small cardinal tubercle in *right valve*. Interior smooth, faintly iridescent.

Measurements: Length 6.0 mm, height 5.4 mm, inflation 4.1 mm.

REMARKS. — By its relatively high and rostrate outline, *C. exigua* somewhat recalls *Poromya eximia*, but it has a much less inflated shape and sparser pustules on the outer surface. Its cardinal tubercle is also more prominent than that of *P. eximia*. It resembles the Atlantic *C. braziliensis* Allen & Morgan, 1981, which has a similar shape but no umbonoposterior ridge, rays of granules restricted to the posterior region, a less sharply truncate posterior margin, and a completely edentulous hinge in the right valve.

ETYMOLOGY. — The specific name is derived from the Latin *exiguus*, meaning small and scanty.

*Cetoconcha gloriosa* (Prashad, 1932)

Figs 70-71

*Poromya (Cetoconcha) gloriosa* Prashad, 1932: 326, pl. 7, figs 29-30.

MATERIAL EXAMINED. — Indonesia. CORINDON: stn 208, 0°14.6' S, 117°52' E, 150 m, 3 spms.

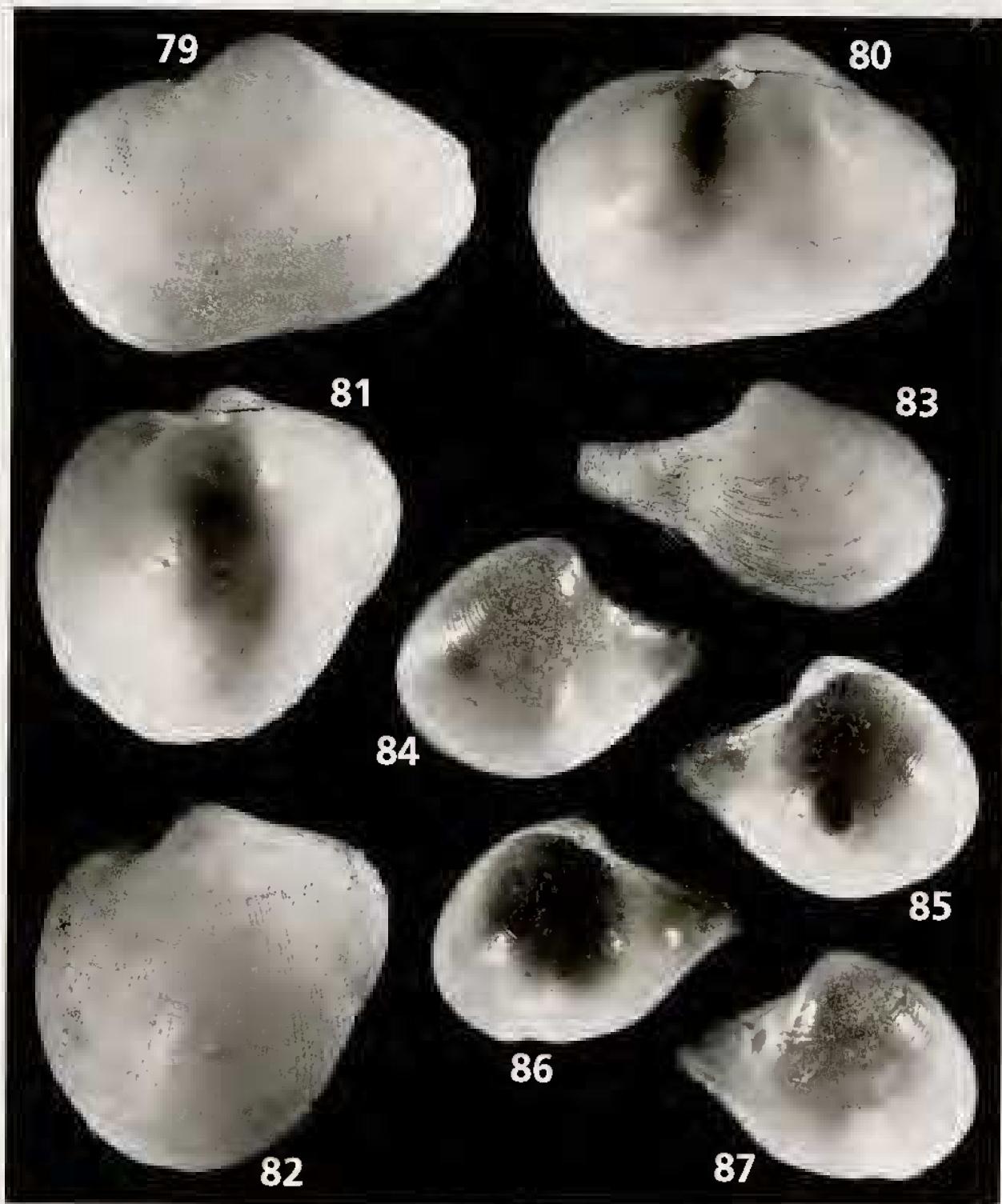
DISTRIBUTION. — Indonesia, East of Flores and Makassar Strait, New Guinea and South China Sea (BERNARD *et al.*, 1993), in 150-400 m.

DESCRIPTION. — *Shell* thin, rather elongate, elliptical-ovate, with a widely rostrate, somewhat compressed posterior end. Subequivalve, right valve slightly larger than left. Umbones subcentral, prosogyrate, inflated, prominent. Sculpture of concentric striae and numerous rows of minute

granules, denser on rostrum. Periostracum thin, adherent, light straw in colour. Ligament opisthodeltic, mainly external. Hinge feeble, edentate in *left valve*, with a small cardinal denticle in front of ligament in *right valve*. Interior glossy, somewhat pearly. Length 21.1 mm.

REMARKS. — The present material corresponds rather well with the original diagnosis of *C. gloriosa*, except for the shape of the rostral region, which appears less attenuate than on Prashad's figures. It is thus with some misgiving that these specimens are identified with Prashad's species.

A complete but dead shell of *C. gloriosa* has also been reported by KILBURN (1973: 577) from Natal waters, in 35 m depth. However, description of its hinge leaves doubt about the identity of this form and suggests it belongs to a different species.



FIGS 79-87. — 79-80, Euciroidae; *Euciropa trapeza*, "Vauban" 1978-79: stn 40, paratype,  $L = 42.0$  mm, exterior of left valve (79), interior of right valve (80). — 81-82, Verticordiidae: *Halicardia philippinensis*, MUSORSTOM 1: stn 44,  $L = 16.2$  mm, interior of right valve (81), exterior of left valve (82). — 83, Cuspidariidae: *Cuspidaria lubangensis*, MUSORSTOM 1: stn 63, holotype,  $L = 19.5$  mm, exterior of right valve. — 84-87, Cuspidariidae: *Halonympha leionymoides*, MUSORSTOM 1: stn 50, holotype,  $L = 9.0$  mm, exterior of left valve (84), interior of left valve (85), interior of right valve (86), exterior of right valve (87).

*Cetococoncha japonica* Habe, 1952

Fig. 76

*Cetococoncha japonica* Habe, 1952b: 159, pl. 22, figs 2-4.

MATERIAL EXAMINED. — New Caledonia. "Vauban" 1978-79: stn 9, 22°20' S, 167°10' E, 175-200 m, 1 v.

DISTRIBUTION. — Japan, Hokkaido to Shikoku, in 200-650 m (HABE, 1977); also in Izu Peninsula, Honshu, in 60-120 m (OKUTANI & MATSUKUMA, 1982). New Caledonia, in 175-200 m (dead).

DESCRIPTION. — Shell ovate to elongate. Umbones slightly in front of midlength of valves. Translucent, thin, fragile at juvenile stages; becoming thicker, covered with a velvety, brownish periostracum and attaining a rather large size for

the genus (up to 37.5 mm length, *fide* HABE, 1964). Outer surface with numerous minute pustules. A small cardinal tooth present in front of ligament in right valve.

REMARKS. — It is with some misgiving that this small damaged right valve (length: 7.9 mm) is identified with *C. japonica*. *Cetococoncha japonica* was first noted as *Cetococoncha* sp. (HABE, 1952a: 274) and described as a new species later in the same year. Anatomy is not known.

## CLASSIFICATION

## GENERAL REMARKS

The so-called septibranchiate bivalves, currently assigned to the Anomalodesmata (KEEN, 1969; HABE, 1977; VOKES, 1980; BOSS, 1982) or to several orders (NEVESSKAIA *et al.*, 1971; STAROBOGATOV, 1977, 1992; SCARLATO & STAROBOGATOV, 1978, 1979, 1983, 1985; this paper) are, as far as known, exclusively carnivorous with unique features of their alimentary canal and feeding style (YONGE, 1928; PURCHON, 1956, 1987, 1990; MORTON, 1981a, b, 1985c, 1987), and free proteolytic enzymes are present in the stomach (REID, 1977). Although a few benthic Foraminifera, spicules and detrital material may be found in the stomach, the muco-ciliary system necessary for suspension and detrital feeding is absent or vestigial, and septibranchs are not likely to be partially carnivorous as suggested by NAKAZIMA (1967).

The analysis of dietary records (KNUDSEN, 1967, 1970; BERNARD, 1974; KRYLOVA, 1989) and study of functional anatomy strongly suggest that cupidariids feed mainly on swimming prey, while poromyids and verticordiids catch bottom-dwelling prey (MORTON, 1987). Prey capture has been observed in *Cupidaria* by REID & REID (1974), and in *Cardioniya* by REID & CROSBY (1980). It is not simply accomplished by aspiration, but utilizes the protrusion of the inhalant siphon, effected by a complex muscular and haemocoel system. *Poromya* is thought to use a large raptorial hood formed by the eversible, inhalant siphon (MORTON, 1981a). In verticordiids, prey capture has been incorrectly ascribed to "sticky" tentacles (ALLEN & TURNER, 1974), but these have been revealed to be only sensory and not glandular. The mechanism of capture seems rather to depend on the eversion of a short conical siphon or of a raptorial hood (MORTON, 1985a, 1987).

Recent progress, particularly in the functional anatomy, makes necessary a re-evaluation of the systematics of the group. Early workers associated verticordiids, poromyids and cupidariids in a continuous series of modifications from typically eulamellibranch to entirely gill-less forms, but the new data rather suggest that similarities are the consequence of adaptation to macrophagy

(SAUVINI-PLAWEN, 1980; BERNARD, 1983; MORTON, 1985c). However, the origin of the septum is still uncertain — the gill origin school (PELSENEER, 1888a, b, 1891) and the pallial origin school (DALL, 1886a, b, 1888) still have adherents —, and this issue may be finally resolved only by embryological studies (YONGE, 1947). The discovery of cupidariids with vestigial gills (ALLEN & MORGAN, 1981) does not alter the case. It suggests a progressive reduction of the gills and concurrent formation of the septum. But, while innervation of the septum of *Cardioanya* is distinctly of mantle origin (PLATE, 1897; BERNARD, 1974), it is likely, as suggested by MORTON (1981b), that the development of the septum involved a significant pallial element and may be derived from the taenioid muscles present in *Parilimyia* (MORTON, 1981a, 1982). The family Parilimyidae of the superfamily Pholadomyoidea, while not septibranch, has so many parallel adaptations and so prefigures the superfamilies Verticordioidea and Cuspidarioidea, that it should be included as a potential root lineage.

The following synopsis of classification, based on an original frame elaborated by F.R. BERNARD, considers septibranchs as representative of two orders of the subclass Anomalodesmata.

As proposed by RUNNEGAR (1974), cupidariids are not thought to be related to the poromyids, and the discovery of *Protocupidaria* by ALLEN & MORGAN (1981) shows them to be unrelated to the protobranchs (PURCHON 1956, 1960, 1963; BERNARD 1974). The poromyids have a significantly different statocyst structure (MORTON, 1985b) and are placed in the order Poromyoida.

In a short paper overlooked by F. R. BERNARD, SCARLATO & STAROBEGATOV (1983) proposed a new classification of septibrachiate bivalves, mainly based on the structure of septum. A free translation of this paper is given in Appendix 2. Its major difference with other classifications, is a proliferation of family-group or higher-rank taxa, many of which are new. Although the usage of several ordinal taxa can reflect the probable polyphyletic nature of septibranchs, and while some of the divisions may prove to be useful, many of them seem presently unwarranted. This agrees with the conclusions of MAXWELL (1988), who discussed a classification of the Protobranchia established by the same authors. Their system of Septibranchia, which incorporates some of the oldest and most questionable bivalve-like fossils currently known as the Rostroconcha (POJETA & RUNNEGAR, 1976), so greatly differs from the classification expressed in the present paper that it has not been attempted to reconcile the two. Only new genera proposed by SCARLATO & STAROBEGATOV are tentatively included here, because it did not alter the original frame of classification.

## SYNOPSIS OF CLASSIFICATION

Subclass ANOMALODESMATA Dall, 1889 [nom. transl. et correct. KEEN, 1963]

Order PHOLADOMYOIDA Newell, 1965

Superfamily PHOLADOMYOIDEA Gray, 1847 [nom. transl. NEWELL, 1965]

Family PARILIMYIDAE Morton, 1982

Genus *Parilimya* Melvill & Standen, 1899

Genus *Paniacca* Dall, 1905

= *Aporema* Dall, 1903, non Scudder, 1890 (Insecta: Capsidae)

Genus *Nipponopaniacca* Habe, 1977

Superfamily VERTICORDIOIDEA Stoliczka, 1871 [nom. transl. BERNARD, 1974]

Family VERTICORDIIDAE Stoliczka, 1871

Genus *Verticordia* J. de C. Sowerby, 1844

= *Hippagus* Philippi 1844, non Lea, 1833 (Mytilidae); *Hippella* Dall, 1903, non Mörcb, 1861

(Condylocardiidae); *Iphigenia* Costa, 1850, non Schumacher, 1817 (Donacidae)

Genus *Pecchiolia* Savi & Meneghini, 1851 (fossil: Caenozoic)

Genus *Vertambitus* Iredale, 1930

Genus *Simplicicordia* Kuroda & Habe in Kuroda, Habe & Oyama, 1971

Genus *Trigonulina* d'Orbigny, 1846

Genus *Spinosipella* Iredale, 1930

Genus *Haliris* Dall, 1886b

Subgenus *Haliris* s. s.

Subgenus *Setaliris* Iredale, 1930

Subgenus *Vertisphaera* Iredale, 1930

Genus *Halicardia* Dall, 1895b

= *Halicardissa* Dall, 1913; *Haloconcha* Dall, 1900b *nom. null.*

Genus *Kirinuia* Marwick, 1942 (fossil: Paleogene)

Family LYONIELLIDAE Dall, 1895a

= POLICORDIIDAE Scarlato, 1981

Genus *Policordia* Dall, Bartsch & Rehder, 1938

Subgenus *Policordia* s. s.

= *Latebranchia* Ivanova in Scarlato & Starobogatov, 1983

Subgenus *Augustebranchia* Ivanova in Scarlato & Starobogatov, 1983

Subgenus *Dallicordia* Scarlato & Starobogatov, 1983

Genus *Laevicordia* Seguenza, 1876a

Genus *Lyousiella* G. O. Sars, 1872

= *Proagorhua* Iredale, 1930; *Rectilyonsiella* Scarlato & Starobogatov, 1983; *Allenicordia*

Scarlato & Starobogatov, 1983; *?Spinolyonsiella* Scarlato & Starobogatov, 1983

Family EUCIROIDAE Dall, 1895a

Genus *Euciroa* Dall, 1881

Genus *Acreuciroa* Thiele & Jaeckel, 1931

Superfamily CUSPIDARIOIDEA Dall, 1886b [*nom. transl.* SCARLATO & STAROBOGATOV in NEVESSKAIA et al., 1971]

Family CUSPIDARIIDAE Dall, 1886b

Genus *Protocuspidaaria* Allen & Morgan, 1981

Subgenus *Protocuspidaaria* s. s.

Subgenus *Bidentaria* Allen & Morgan, 1981

Subgenus *Edentaria* Allen & Morgan, 1981

Genus *Pseudouneaera* Sturany, 1901

= *Bendoneaera* Cossmann, 1904, *nom. null.*; *Jeffreysomya* Nordsieck, 1969

Genus *Cuspidaaria* Nardo, 1840

= *Neuera* Gray in Griffith & Pidgeon, 1834, *non* Robineau-Desvoidy, 1830 (Insecta: Diptera); *Aulacophora* Jeffreys, 1882, *non* Chevrolat in Dejean, 1835 (Insecta: Coleoptera); *Alleuineaera* Scarlato & Starobogatov, 1983

Subgenus *Cuspidaaria* s. s.

Subgenus *Rhiuoclana* Dall & Smith in Dall, 1886b

= *Rhinomya* A. Adams, 1864, *non* Robineau-Desvoidy, 1830 (Insecta: Diptera); *Austroneaera* Powell, 1937

Subgenus *Luzonia* Dall & Smith in Dall, 1890

Subgenus *Leiomya* A. Adams, 1864

Subgenus *Soyomya* Okutani, 1985

Subgenus *Tergulina* Nosky, 1939 (fossil: Paleogene)

Subgenus *Tropidomya* Dall & Smith in Dall, 1886b

= *Tropidophora* Jeffreys, 1882, *non* Troschel, 1847 (Mollusca: Gastropoda); *Gouiphora* Jeffreys, 1883, *non* Phillips, 1848 (Modiomorphidae)

Subgenus *Nordouneaera* Okutani, 1985

Subgenus *Vulcanonya* Dall, 1886b

Genus *Plectodou* Carpenter, 1864

Genus *Halonympha* Dall & Smith in Dall, 1886b

Genus *Cardiomya* A. Adams, 1864

= *Spathophora* Jeffreys, 1882, non Amyot & Serville, 1843 (Insecta: Hemiptera)  
Subgenus *Cardiomya* s. s.

Subgenus *Bowdenia* Dall, 1903 (fossil: Neogene)  
Subgenus *Kurodamya* Okutani & Sakurai, 1964

Genus *Bathyneaera* Scarlato & Starobogatov, 1983

= *Semicardiomya* Scarlato & Starobogatov, 1983; *Labromysa* Bernard, 1989

Genus *Boriesia* Doncieux, 1911 (fossil: Paleogene)

Genus *Octoporia* Scarlato & Starobogatov, 1983

Genus *Myonera* Dall, 1886a

Subgenus *Myonera* s. s.

Subgenus *Rengea* Kuroda & Habe in Kuroda, Habe & Oyama, 1971

Genus *Fabagella* Cossmann, 1886 (fossil: Paleogene)

Order POROMYOIDA Pelseneer, 1906 [nom. correct. NEWELL, 1965]

Superfamily POROMYOIDEA Dall, 1886b [nom. transl. DALL, 1895a]

Family POROMYIDAE Dall, 1886b

Genus *Poromya* Forbes, 1844

= *Embla* Lovén, 1846; *Thetis* H. Adams & A. Adams, 1856, non J. de C. Sowerby, 1826  
(Mactromyidae); *Ectorisna* Tate, 1892; *Questimya* Iredale, 1930

Subgenus *Poromya* s. s.

Subgenus *Mioporomya* Sacco, 1901 (fossil: Neogene)

Subgenus *Dermatomya* Dall, 1889

Subgenus *Cetomya* Dall, 1889

Genus *Perlaporomya* Scarlato & Starobogatov, 1983

Genus *Neaeroporomya* Cossmann, 1886 (fossil: Paleogene)

Genus *Pseudocuspidaaria* Eames, 1951 (fossil: Paleogene)

Genus *Cymella* Meek, 1864 (fossil: Cretaceous)

Genus *Cetoconcha* Dall, 1886b

= *Silenia* E.A. Smith, 1885, non Mulsant & Rey, 1874 (Insecta Coleoptera); *Cribrosoconcha*  
Krylova, 1991

Genus *Liopistha* Meek, 1864 (fossil: Cretaceous)

= *Psilomya* Meek, 1876

## DIAGNOSES OF SUPRASPECIFIC TAXA

In this section, diagnoses are only for taxa with Recent representatives. They include also the pholadomyoid family Parilimyidae.

Order PHOLADOMYOIDA Newell, 1965

Superfamily PHOLADOMYOIDEA Gray, 1847

Family PARILIMYIDAE Morton, 1982

*Shell* thin, equivalve, gaping at both ends. Sculpture radial, either feeble or strong. Periostracum thin, usually with adherent sand grains. Ligament external, opisthodetic. Hinge plate feeble, edentate or with an anterior tubercle. Pallial line with a moderately deep sinus.

*Mantle* lobes fused, with an anteroventral pedal gape and a fourth pallial aperture. Mantle margins with arenophilic radial glands. Inhalant siphon very large, eversible; exhalant siphon small. Taeniod muscles present. Foot rounded, elongate. Gills eulamellibranch, with reduced outer

demibranch. Labial palps short, ridged. Stomach features transitional between types II and IV (PURCHON, 1990). Midgut and style-sac conjoined. Intestine passing through the ventricle of heart. Statocyst with a multicellular capsule of ciliated cells and a large free statolith within, either single or associated with a number of small statoconia. Hermaphroditic.

Remarks: This family is included here because it has many of the adaptations shown by the carnivorous groups. It is probably at least partly raptorial, and may be ancestral to the verticordiids (MORTON, 1981a, 1982, 1987).

#### Superfamily VERTICORDIOIDEA Stoliczka, 1871

*Shell* inflated, inequilateral, ovate to quadrate or trapezoidal, subequivalve. Outer surface usually with radial sculpture, granulate to spinose, sometimes smooth. Ligament opisthodetic, with resilium supported by a lithodesma. Hinge variable, feeble and edentate to more or less thickened, with cardinal and lateral elements. Interior of valves nacreous. Microstructure of shell with prismatic outer, lenticular nacreous middle, and sheet nacre inner layers.

*Mantle* lobes fused, with a variable pedal opening and arenophilic radial glands on margins. Inhalant and exhalant apertures usually with short siphonal apparatus, surrounded by large sensory tentacles. Foot digitiform or laterally compressed, often weakly byssate in adult. Septum diaphanous, with reduced eulamellibranch gills. Labial palps mostly small; lips enlarged as an oral funnel. Stomach very muscular, of type II. Two ducts to the digestive diverticula. Midgut and style-sac conjoined. Intestine passing through the ventricle of the heart. Statocyst with a large multicellular capsule of ciliated cells and a single free statolith within. Hermaphroditic.

#### Family VERTICORDIIDAE Stoliczka, 1871

*Shell* ovate to trapezoidal, generally with a conspicuous radial sculpture and a well-demarcated lunule. Outer surface frequently granulate or spinose. Hinge with at least a cardinal tubercle in right valve.

*Gills* reduced. Foot digitiform, often byssate. Labial palps reduced.

#### Genus *VERTICORDIA* J. de C. Sowerby, 1844

Type species (by monotypy): *Hippagus? cardiiformis* J. de C. Sowerby, 1844. Pliocene, Northern Europe.

*Shell* inflated, rather solid, usually granulate, pustulate or spinose. Umbones prosogyrate, prominent. Sculpture often with radial riblets or plications. Lunule large, deeply impressed. Hinge plate with a hooked cardinal tubercle in right valve, occasionally with posterior lateral tooth.

Included species: *australiensis* E. A. Smith, *bordaensis*, *expansa*, *granulifera*, *guineensis*, *inornata*, *monosteira*, *perversa*, *quadrata*, *seguenzae*, *tenerrima*, *woodi*.

#### Genus *VERTAMBITUS* Iredale, 1930

Type species (OD): *Verticordia vadosa* Hedley, 1907a. Recent, Australia.

*Shell* rather compressed, with prominent umbones. Sculpture of feeble wide radial riblets and rows of pustules on entire surface. Hinge heavy, with at least a strong cardinal tooth in right valve.

Included species: *affinis*, *cuneatus*, *excoriatus*, *torridus*, *triangularis*, *vadosus*.

Genus *SIMPLICICORDIA* Kuroda & Habe in Kuroda, Habe & Oyama, 1971

Type species (OD): *Thyasira trigonata* Yokoyama, 1922. Pleistocene to Recent, Japan.

*Shell* small, thin, inflated, subtrigonal. Umbones prosogyrate, not prominent. Anterodorsal margin concave; posterodorsal margin convex. Surface minutely granulated. Sculpture of feeble concentric irregular riblets, corrugating the interior of the shell. No radial sculpture. Hinge plate feeble, with an obscure cardinal denticle in right valve.

Included species: *trigonata*.

Genus *TRIGONULINA* d'Orbigny, 1846

Type species (by monotypy): *Trigonulina ornata* d'Orbigny, 1846. Recent, Caribbean.

*Shell* rather compressed, solid. Radial ribs prominent, irregularly spaced, crenulating the ventral shell margin. Lunule deeply impressed. Right valve with a stout, posteriorly recurved cardinal tooth, and a long socket to accomodate the posterior lateral tooth of the opposite valve. Interior brilliantly nacreous.

Included species: *hancocki*, *ornata*.

Genus *SPINOSIPELLA* Iredale, 1930

Type species (OD): *Verticordia ericia* Hedley, 1911. Recent, Indo-Pacific.

*Shell* inflated, solid, with strongly enrolled, prosogyrate umbones overhanging the lunule. Sculpture of prominent, radial ribs crenulating the ventral shell margin. Lunule small, deeply invaginated. Outer surface densely granulate to spinose. Hinge of right valve with a strong cardinal tooth. Left valve usually with a smaller corresponding denticle.

Remarks: Usually treated as a subgenus in *Verticordia*, but the near absence of lunule and hinge features support its separation.

Included species: *acuticostata*, *costeminens*, *deshayesiana*, *ericia*.

Genus *HALIRIS* Dall, 1886b

Type species (OD): *Verticordia fischeriana* Dall, 1881. Recent, Caribbean.

*Shell* inflated, finely granulate, with small and regular radial ribs, or with obsolete sculpture. Hinge usually with cardinal tubercles and posterior lateral teeth in both valves, more developed in the right.

Subgenus *Haliris* s. s.

*Shell* solid, sculpture with wide radial riblets. Lunule shallow. Hinge plate strong; right valve with a stout cardinal tooth and a lateral ridge under posterodorsal margin; left valve with a minute

ephemeral cardinal tubercle and a small posterior lateral tooth. Inner ventral margin of valves crenulated.

Included species: *berenicensis*, *crebrilirata*, *fischeriana*, *granulata*, *jaffaeusis*, *lamothei*, *multicostata*, *spinosa*, *teporis*.

#### Subgenus *Setaliris* Iredale, 1930

Type species (OD): *Verticordia setosa* Hedley, 1907a. Recent, New Zealand.

*Shell* small, solid, quadrate, with numerous radial riblets and intercalated concentric striae. Lunule shallow. Hinge with cardinal and lateral teeth in both valves. Ventral shell margin crenulate, somewhat flexuous.

Included species: *accessa*, *pygmaea*, *setosa*.

#### Subgenus *Vertisphaera* Iredale, 1930

Type species (OD): *Vertisphaera cambrica* Iredale, 1930. Recent, Australia.

*Shell* thin, sculpture obsolete. Lunule depressed. Hinge plate feeble, right valve with an obscure cardinal tooth. Inner ventral margin of shell smooth.

Remarks: Frequently placed as a subgenus in *Verticordia*, the hinge shows it to be referable to *Hali-*  
*ris*.

Included species: *cambrica*.

#### Genus *HALICARDIA* Dall, 1895b

Type species (OD): *Mytilimeria flexuosa* Verrill & Smith in Verrill, 1881. Recent, North Atlantic.

*Shell* large for the group, inflated. Radial sculpture developed either as ribs or strong to feeble plications and furrows, scalloping the ventral shell margin. Outer surface with small granules. Lunule small, deeply impressed. Hinge plate feeble, right valve with a small to obsolete cardinal tooth. Visceral mass with an opisthopodium posterior to the foot.

Remarks: The separation of *Halicardissa* Dall, 1913 (type species: *Verticordia perplicata* Dall, 1890) does not seem to be warranted, neither on conchological nor on anatomical grounds.

Included species: *angulata*, *carinifera*, *ferruginea*, *fischeri*, *flexuosa*, *gouldi*, *houbricki*, *maoria*, *nipponensis*, *perplicata*, *philippinensis*, *saharica*.

#### Family LYONSIELLIDAE Dall, 1895a

*Shell* thin, inequilateral, suborbicular to quadrate, with a reduced sculpture. Lunule obscure. Outer surface with or without granulations. Hinge edentate.

*Gills* reduced to absent. Foot digitiform, usually with a byssal groove. Labial palps small.

Genus *POLICORDIA* Dall, Bartsch & Rehder, 1938

Type species (OD): *Policordia diomedea* Dall, Bartsch & Rehder, 1938. Recent, Hawaii.

*Shell* suborbicular to trapezoidal, usually with radiating lirae and concentric marks, often somewhat reinforced by periostracum. Outer surface completely devoid of spines or granulations. *Gills* variably reduced to absent.

Remarks: IVANOVA (1977) divided *Policordia* into two new subgenera (*Angustebanchia* and *Latebranchia*), thereby extinguishing *Policordia* s. s. However, IVANOVA originally failed to designate type species for her two subgenera which are then unavailable, under Article 13b of the Code of Nomenclature, whereas the species described as new in her work are available under Article 11, h, iii, 1.

Subsequently, IVANOVA made *Angustebanchia* and *Latebranchia* available (in SCARLATO & STAROBOGATOV, 1983) as full genera, by the designation of type species and the explicit reference to the diagnoses published in 1977. We agree with SCARLATO & STAROBOGATOV to consider that *Latebranchia* is equivalent to *Policordia* s. s.

Subgenus *Policordia* s. s.

Inhalant aperture with one row of tentacles. Gills wide, fused posterior to the foot. Mouth broad. Bathyal to abyssal.

Included species: *atlantica*, *cordata*, *densicostata*, *diomedea*, *gemma*, *grandis*, *insolita*, *ivanovae*, *jeffreysi* (Friele), *lisbethae*, *murrayi*, *obliqueovata*, *olivacea*, *ovata*, *papyracea*, *pilula*, *radiata*, *subrotundata*.

Subgenus *Angustebanchia* Ivanova in Scarlato & Starobogatov, 1983

Type species (OD): *Policordia* (*Angustebanchia*) *rectangulata* Ivanova, 1977. Recent, Kurile-Kamchatka Trench.

Inhalant aperture with two rows of tentacles. Gills narrow, free posterior to the foot. Mouth narrow. Hadal.

Included species: *extenta*, *laevigata*, *maculata*, *rectangulata*.

Subgenus *Dalicordia* Scarlato & Starobogatov, 1983

Type species (OD): *Lyonsiella alaskana* Dall, 1895b. Recent, East Pacific.

Inhalant aperture with one row of tentacles. Gills absent. Septum thin, with a few pairs of small pores. Mouth large. Bathyal to abyssal.

Included species: *alaskana*, *ochotica*, *uschakovi*.

Genus *LAEVICORDIA* Seguenza, 1876a

Type species (subsequent designation by SOOT-RYEN, 1966): *Verticordia (Laevicordia) orbiculata* Seguenza, 1876a. Pliocene to Recent, Mediterranean.

*Shell* suborbicular, with fine granules and obscure radial striae. Hinge margin may be somewhat thickened anteriorly. Gills moderately reduced.

Included species: *abscissa*, *axioides*, *frieli*, *galatheae*, *horrida*, *insculpta*, *orbiculata*, *pacifica*, *sinuosa*, *suidti*.

Genus *LYONIELLA* G. O. Sars, 1872

Type species (by monotypy): *Pecchiolia abyssicola* G. O. Sars, 1872. Recent, Arctic, North Atlantic.

*Shell* small, oval to subquadrate, generally with fine pustules or spines and radial striae. Hinge plate feeble, edentate, but anterior of the left valve may be thickened. Inhalant siphon with an eversible raptorial valvule. Taeniod muscles sometimes well developed. Gills moderately reduced.

Included species: *abyssicola*, *agulhaseensis*, *compressa*, *curta*, *formosa*, *fragilis*, *magnifica*, *parva*, *perplexa*, *quadrata*, *quaylei*, *subquadrata*.

Family EUCIROIDAE Dall, 1895a

*Shell* usually thick, solid, with numerous radial riblets or striae. Outer surface finely pustulose or spinose. Lunule weakly demarcated. Hinge plate robust, with variably developed lateral laminae and one or two cardinal teeth. Interior of valves highly nacreous, radially striated.

*Mantle* margins strongly muscular. Gills with reduced outer demibranch. Foot laterally compressed, without a byssal groove. Labial palps large, striated. Lips produced into lateral bulbs.

Genus *EUCIROA* Dall, 1881

Type species (by monotypy; genus name *Euciroa* cited in synonymy): *Verticordia elegantissima* Dall, 1881. Recent, Caribbean.

*Shell* ovate, inflated. Hinge of right valve with a strong, curved cardinal tooth, and usually a posterior ridge. Left valve with a small cardinal tooth edging the resilifer, and often shallow lateral laminae.

Included species: *aethiopica*, *crassa*, *eburnea*, *elegantissima*, *galatheae*, *granifera*, *mediopacifica?*, *millegemmata*, *pacifica*, *spinosa*, *trapeza*.

Genus *Acreuciroa* Thiele & Jaeckel, 1931

Type species (by monotypy): *Euciroa (Acreuciroa) rostrata* Thiele & Jaeckel, 1931. Recent, Indo-Pacific.

*Shell* posteriorly produced, somewhat compressed. Right valve with a conical cardinal tooth. Left valve nearly edentate.

Included species: *rostrata*.

## Superfamily CUSPIDARIOIDEA Dall, 1886b

*Shell* inflated, strongly inequilateral, rounded to ovate anteriorly, rostrate posteriorly. Most of the time slightly inequivalue, with left valve larger. Sculpture variable, often reduced to absent, sometimes with radial or concentric elements. Outer surface with thin periostracum, generally smooth (rarely granulate). Ligament sunken into a small resilifer, supported by a lithodesma. Hinge feeble, edentate or with small cardinal tubercles and lateral ridges. Interior of valves porcelaneous. Microstructure of shell with homogenous outer and inner layers.

*Mantle* lobes fused, with a small pedal opening. Inhalant and exhalant apertures with well developed siphons united at their base and with seven prominent sensory tentacles. Exhalant siphon short and eversible; inhalant siphon relatively large and forcefully extensible to capture swimming prey. Foot digitiform, with a byssal groove. Adult not byssate. Gills generally absent. Septum usually muscular, with a number of paired pores (usually four or five pairs of pores). Labial palps small, flap-shaped (posterior palps cup-shaped, when developed). Stomach very muscular, of type II. Two ducts to the digestive diverticula. Midgut and style-sac separated. Intestine passing through the ventricle of the heart. Statocyst with a small capsule comprising a few swollen and microvillose cells, and a large, ovate, not freely mobile statolith within. Dioecious.

## Family CUSPIDARIIDAE Dall, 1886b

Characters same as for the superfamily.

Genus *PROTOCUSPIDARIA* Allen & Morgan, 1981

Type species (OD): *Protocuspidaria verityi* Allen & Morgan, 1981. Recent, Atlantic.

*Shell* equivalue, rounded, laterally compressed; rostrum short, truncate. Hinge edentate, or with anterior lateral tooth in one or both valves. Septum thin, membranous, with two longitudinal rows of gill filaments but no muscle attachments to the shell. Posterior labial palps large, cup-shaped.

Remarks: This very interesting genus may represent a transitional stage in the development of the gill-less cuspidariids (ALLEN & MORGAN 1981). The division of the representatives into three subgenera may be premature as the hinge dentition may be mutable.

Subgenus *Protocuspidaria* s. s.

Hinge of right valve with an anterior lateral tooth. Left valve edentate.

Included species: *verityi*.

Subgenus *Bidentaria* Allen & Morgan, 1981

Type species (OD): *Protocuspidaria (Bidentaria) atlantica* Allen & Morgan, 1981. Recent, North Atlantic.

Hinge of both valves with an anterior lateral tooth.

Included species: *aequatorialis*?, *atlantica*, *colpodes*?

Subgenus *Edentaria* Allen & Morgan, 1981

Type species (OD): *Protocuspidaria (Edentaria) simplis* Allen & Morgan, 1981. Recent, North Atlantic.

Hinge of both valves edentate.

Included species: *ruginosa*?, *simplis*, *thomassini*.

Genus *PSEUDONEAERA* Sturany, 1901

Type species (by monotypy): *Pseudoneaera thaumasia* Sturany, 1901. Recent, Red Sea.

Rostrum short, trigonal. Hinge of right valve with anterior and posterior cardinal teeth. Left valve with an anterior cardinal tooth.

Included species: *minor*, *periplomoides*?, *semipellucida*, *tasmanica*?, *thaumasia*, *trigonalis*?, *tritcata*, *wellmani*.

Genus *CUSPIDARIA* Nardo, 1840

Type species (by monotypy): *Cuspidaria typus* Nardo, 1840 = *Tellina cuspidata* Olivi, 1792. Recent, Northeast Atlantic, Mediterranean.

Outline globular to ovate; rostrum variably developed, often prominent. Left valve slightly more convex. Hinge teeth present, at least in the right valve. Septum muscular, usually with four or five pairs of pores, with both anterior and posterior muscle attachments to the shell. Labial palps small.

Remarks: The general arrangement of the genus depends on the type and presence of hinge teeth, which seem rather mutable.

Subgenus *Cuspidaria* s. s.

Outer surface smooth or with concentric lirae. Rostrum often well developed. Hinge of right valve with a posterior lateral tooth. Left valve edentate.

Included species: *abyssopacifica*, *angasi*, *annandalei*?, *apodema*, *approximata*, *arctica*, *arcuata*, *ascoldica*, *atlantica*, *azorica*?, *barnardi*, *bicarinata*, *brachyrhynchus*, *braziliensis*?, *buccina*, *capensis*,

*chimensis, circinata, cochiuensis?, concentrica, consociata, contracta, convexa* Pelseneer, *corrugata, cowani, cuspidata, delli, dissociata, elegans, elliptica?, erina, exarata, exigua, fairchildi, formosa, fraterna, gigantea* Prashad, *glacialis, gracilis, guineensis?, haasi, halei, hawaiensis, hindsiana, hyalina?, imbricata, infelix, japonica, jeffreysi, jugosa* Wood?, *kerguelensis, kurodai, kyushuensis, lamellosa* G. O. Sars, *latesulcata, lubangensis, macrorhynchus, maxima, media, meridionalis, microrhina, initis, morelandi, morioria?, morrisae, nasuta* A. Adams, *uatalensis, nobilis, obesa, obtusirostris, occidna, okezoko, optima, panamensis, papyria?, parapodema, parkeri, parva, patagonica, pellucida, platensis, prolatissima, rosea, rostrata, sadoensis, semirostrata, solidula, steindachneri, subglacialis, subtorta, suganumai, sulcifera, teuella, teranachii, tomlini, trailli, trigona?, truncata?, tuhua, turgida, undata, variola, ventricosa, willetti, wollastonii.*

#### Subgenus *Rhinoclama* Dall & Smith in Dall, 1886b

Type species (ICZN Opinion 1376): *Cuspidaria (Rhinoclama) adamsi* Morgan & Heppell in Allen & Morgan, 1981. Recent, Philippines.

Rostrum moderately extended, with two radial ridges. Outer surface with fine concentric striations. Hinge of right valve with triangular anterior and posterior lateral teeth. Left valve edentate.

Remarks: The group was established as *Rhinomya* A. Adams, 1864, as a subgenus of *Neaera*, but was preoccupied. *Rhinoclama* Dall & Smith (in Dall, 1886b) was proposed as a replacement name, but a nomenclatural problem existed for a number of years, because the type species was a *nomen nudum*. The result of an inadequate nomenclatural action by STOLICZKA (1871) merged *Luzonia* Dall & Smith (in Dall, 1890) as a synonym, although the differences between the two had already been quoted by E. A. SMITH (1885). The situation was finally regularized by HEPPELL & MORGAN (1983) and Opinion 1376 of the ICZN (1986).

Included species: *abrupta, adamsi* Heppell & Morgan, *alta, aupouria, benthedii, brevirostris* Powell, *dorsirecta, dubia* Pelseneer, *filatovae, finlayi, halimera, uitens, notabilis, raoulensis, rugata* A. Adams, *similis, semistrigosa, simulans, teres, testai, valdiviae*.

#### Subgenus *Luzonia* Dall & Smith in Dall, 1890

Type species (ICZN Opinion 1376): *Neaera philippinensis* Hinds, 1843. Recent, Philippines.

Rostrum short, tapered, largely confluent with the disc. Hinge of right valve with an anterior cardinal tooth, frequently twisted. Left valve edentate.

Remarks: STOLICZKA (1871) designated *Neaera philippinensis* (a lapsus for *philippinensis*) Hinds as the type of *Rhinomya*, thereby merging *Luzonia* as an objective synonym. THIELE (1934), following the brief diagnosis of E. A. SMITH (1885), proposed *Cuspidaria adamsi* as a substitute name for *Neaera philippinensis* "A. Adams" non Hinds, 1843. As this was a *nomen nudum*, its substitute has no nomenclatural status. HEPPELL & MORGAN (1983) reviewed the situation and showed that *N. philippinensis* Hinds, 1843, is the type of *Luzonia*. This genus name has been validated by Opinion 1376 of the ICZN (1986).

Included species: *chileensis, philippinensis* Hinds, *simplex, walleri*.

Subgenus *Leiomya* A. Adams, 1864

Type species (by monotypy): *Neaera adunca* Gould, 1861. Recent, Japan.

Outer surface smooth. Rostrum short, trigonal. Hinge of both valves with an anterior cardinal tooth, that of the right valve usually strongly bifid. Right valve also with an anterior and a posterior lateral tooth.

Included species: *adunca* Gould, *inflata*.

Subgenus *Soyomya* Okutani, 1985

Type species (by monotypy): *Cuspidaria kurohijii* Okutani, 1972. Recent, Japan.

Rostrum short, wide. Outer surface with a complex oblique sculpture. Right valve with a posterior lateral tooth. Left valve edentate.

Included species: *clathrata*, *kurohijii*.

Subgenus *Tropidomya* Dall & Smith in Dall, 1886b

Type species (by monotypy): *Neaera abbreviata* Forbes, 1843. Recent, Northeast Atlantic, Mediterranean.

Rostrum short, trigonal. A small anterior cardinal tooth in both valves.

Included species: *abbreviata*, *diagonalis*.

Subgenus *Nordoneaera* Okutani, 1985

Type species (by monotypy): *Cuspidaria trosaetes* Dall, 1925. Recent, Japan.

Shell stout, rostrum very short, with obscure boundary. Hinge of right valve with a posterior lateral tooth. Left valve edentate.

Included species: *trosaetes*.

Subgenus *Vulcanomya* Dall, 1886b

Type species (by monotypy): *Vulcanomya smithii* Dall, 1886b = *Neaera aduica* "Gould" E. A. Smith, 1885 (*non* Gould, 1861).

Rostrum short, trigonal. Hinge of right valve with a short trigonal lateral tooth on either side of the resilifer. Left valve with a tiny double notch in the anterior dorsal margin.

Included species: *smithii*.

Genus *PLECTODON* Carpenter, 1864

Type species (OD): *Plectodon scaber* Carpenter, 1864. Recent, East Pacific.

Outer surface dull, usually granulate. Anterodorsal margin of valves spirally incurved. Hinge of right valve with elongate, reflected anterior and posterior lateral teeth. Left valve edentate. Septum relatively thin, with generally five pairs of pores, and both anterior and posterior muscle shell attachments. Labial palps small.

Remarks: This genus has been frequently but erroneously listed as a subgenus of *Leiomya*. It is treated as a subgenus of *Cuspidaria* by ALLEN & MORGAN (1981).

Included species: *brazieri*, *granulatus*, *ligula*, *scaber*.

Genus *HALONYMPHA* Dall & Smith in Dall, 1886b

Type species (OD): *Neaera clavicularis* Dall, 1881. Recent, West Central Atlantic.

*Shell* ovate; rostrum merged with disc. Hinge of right valve with a small knob-like cardinal tooth. A raised oblique buttress or ridge along the posterodorsal margin of either valve. Septum with more than five pairs of pores, without posterior dorsal attachments to the shell. Posterior labial palps large, cup-shaped.

Remarks: ALLEN & MORGAN (1981) separated the group at the genus level on the basis of significant anatomical differences.

Included species: *aethiopica*, *asiatica*, *atlanta*, *clavicularis*, *congenita*, *depressa*, *ledaeformis?*, *leiomyoidea*, *ros*, *salamensis*, *striatella*.

Genus *CARDIOMYA* A. Adams, 1864

Type species (by monotypy): *Neaera gouldiana* Hinds, 1843. Recent, Western Pacific.

Radial sculpture developed, at least on posterior half of disc. Rostrum frequently clongate. Right valve with a posterior lateral tooth. Septum muscular, with four pairs of pores; a small lateral septal muscle generally present, besides the anterior and posterior muscle shell attachments.

Remarks: Anatomically, the genus does not differ much from *Cuspidaria*, and ALLEN & MORGAN (1981) merged them. The consistent differences in sculpture and general more shallow distribution of *Cardiomya* suggests its separation.

Subgenus *Cardiomya* s.s.

Radial sculpture developed over entire disc. Right valve with a posterior lateral tooth. Left valve edentate.

Included species: *abyssicola*, *alcocki*, *alternata*, *alveata*, *andamanica*, *angusticauda*, *balboae*, *behringensis*, *bruuni*, *californica*, *casta*, *chunii*, *cleryana*, *concinna*, *costata*, *costellata*, *curta* Jeffreys, *didyma*, *ecuadoriana*, *filatovae*, *forticostata*, *fragilissima*, *fujitai*, *gilchristi*, *gouldiana*, *greenii*, *iturupica*, *kashimana*, *knudseni*, *lanieri*, *nipponica*, *obliqua*, *ochotensis*, *orientalis*, *ornatissima*, *pectinata*, *perrostrata*, *pinna*, *planetica*, *rectimarginata*, *reticulata*, *saba*, *sibogai*, *singaporesis*, *sinica*, *striata*, *striolata*, *surinamensis*, *tosaensis*.

Subgenus *Kurodamya* Okutani & Sakurai, 1964

Type species (by monotypy): *Cuspidaria (Cardiomya) fortisculpta* Kuroda, 1948. Recent, Japan.

Radial sculpture absent from the anterior slope of the disc. Right valve with a prominent, often hook-shaped, posterior lateral tooth. Left valve edentate.

Remarks: A useful division, merged by ALLEN & MORGAN (1981) into *Cardiomya*.

Included species: *fallax?*, *fortisculpta*, *levifrons*, *semicostata*.

Genus *BATHYNEAERA* Scarlato & Starobogatov, 1983

Type species (by monotypy): *Cuspidaria hadalis* Knudsen, 1970. Recent, Banda Trench.

Sculpture a complex of radial riblets and concentric lirae, more developed on posterior slope. Rostrum compressed, truncate, merged with disc. Hinge of both valves edentate. Septum muscular, with four pairs of pores; an extra lateral septal muscle attached on posterior part of shell, besides the other posterior muscles.

Remarks: BERNARD (1989) created *Labromysa* (type species: *Cardiomya (Labromysa) disa* Bernard, 1989) as a subgenus of *Cardiomya*, to accomodate species with external shell features similar to *Myonera* Dall, 1886a, but anatomically assignable to *Cardiomya*, and with a feeble edentate hinge plate. He tentatively included in it *Myonera laticella* Dall, 1888b and *Cuspidaria hadalis* (the type species of *Bathyneaera*). Consequently, *Labromysa* is considered here to be a synonym of *Bathyneaera*. KRYLOVA (1993) revised the genus, merging in it *Semicardiomya* Scarlato & Starobogatov, 1983.

Included species: *berndti*, *disa*, *globulosa*, *hadalis*, *laticella*, *paleifera*, *quadrostrata*, *tillamookensis*.

Genus *OCTOPORIA* Scarlato & Starobogatov, 1983

Type species (OD): *Cuspidaria (Myonera) octaporosa* Allen & Morgan, 1981. Recent, North Atlantic.

*Shell* ovate, with a well developed, broad rostrum. Sculpture of low concentric ribs. Hinge of both valves edentate. Septum with eight to twenty pairs of pores, with feeble posterodorsal attachments to the shell. Posterior labial palps large, cup-shaped.

Remarks: KRYLOVA (1994b) revised *Octoporia* and assigned to it a number of new species in addition to the type and only known species, showing then it is worth of generic recognition. The genus accommodates species with shell features recalling *Myonera* Dall, 1886a, but anatomically similar to *Halonympha* Dall & Smith in DALL, 1886b.

Included species: *octaporosa*, *podobeda*, *rugosa*, *sinuosa*.

Genus *MYONERA* Dall, 1886a

Type species (subsequent designation by DALL & SMITH in DALL, 1886b): *Myonera paucistriata* Dall, 1886b. Recent, North Atlantic.

Sculpture with concentric, and sometimes radial elements. Hinge plate feeble, edentate in both valves. Septum muscular, with four pairs of pores. Labial palps small.

Remarks: In a short note to *Nature* published 10 June 1886, DALL introduced *Myonera*, as a subgenus of *Neaera* (an older but invalid name for *Cuspidaria*). The anatomical description he gave, based on a new (but unnamed) species of *Myonera* from the Gulf of Mexico, made it available as a genus-group name without named species. Later (September 1886), DALL & SMITH (*in Dall 1886b: 302*) defined *Myonera* as a full genus, providing a list of species to be included in it, and designating *Myonera paucistriata* Dall as the type species.

#### Subgenus *Myonera* s. s.

Sculpture complex of radial and concentric elements. Resilifer posteriorly directed, or nearly vertical.

Included species: *acutecarinata*, *allenii*, *angularis*, *bicarinata*, *canariensis*, *centobi*, *dautzenbergi*, *dispar*, *garretti*, *gigantea*, *lamellifera*, *limatula*, *lischkei*, *mexicana*, *pailoloana*, *paucistriata*, *pretiosa?*, *rostra*, *tasmanica*.

#### Subgenus *Rengea* Kuroda & Habe *in Kuroda, Habe & Oyama, 1971*

Type species (OD): *Myonera fluctuosa* Kuroda, 1948 = *Cuspidaria (Myonera) caduca* E. A. Smith, 1894. Recent, Indo-Pacific.

Sculpture of the disc with strong concentric plications. Umbones depressed, opisthogyrate. Resilifer projecting, subvertical.

Included species: *caduca*, *murrayi*.

#### Order POROMYOIDA Pelseneer, 1906

##### Superfamily POROMYOIDEA Dall, 1886b

*Shell* inflated, ovate to rhomboidal or trigonal, subequivalve. Posterior rostrum absent. Outer surface with adherent periostracum, smooth or granulate to spiculate. Ligament external, opisthogyrate, without a lithodesma. Dorsal margins of valves united by fused periostracum. Hinge edentate, or with a variable cardinal tooth in right valve. Interior of valves nacreous. Microstructure of shell with prismatic outer and nacreous middle and inner layers, or with a two-layered homogenous structure.

*Mantle* lobes fused, with a large pedal opening. Inhalant and exhalant apertures with siphons, surrounded with up to 15 stout sensory tentacles. Exhalant siphon short; inhalant siphon eversible in a large raptorial hood. Foot digitiform, with a byssal groove. Adult usually not byssate. Gills absent. Septum muscular, with two or three (rarely one) pairs of ostial openings. Labial palps cup-shaped, the anterior ones large. Stomach very muscular, of type II. Two ducts to the digestive diverticula. Midgut and style-sac conjoined. Intestine passing through the ventricle of the heart. Statocyst with a large multicellular capsule of ciliated cells and a single free statolith within. Hermaphroditic.

## Family POROMYIDAE Dall, 1886b

Characters same as for the superfamily.

Genus *POROMYA* Forbes, 1844

Type species (by monotypy): *Poromya anatinoides* Forbes, 1844 = *Corbula granulata* Nyst & Westendorp, 1839. Pliocene to Recent, Arctic, North Atlantic and Mediterranean.

*Shell* surface smooth or granulate. Hinge with or without a cardinal tooth in right valve. Septum with two pairs of ostial openings.

Subgenus *Poromya* s. s.

*Shell* surface with small granules, frequently set in rows. Ligament external, but deeply sunken. Right valve with an anterior cardinal tooth.

Included species: *adelaidis*, *australis*, *curta*, *cymata*, *flexuosa*, *gilchristi*, *granosissima*, *granulata* Nyst & Westendorp, *granuloderua*, *hayashii*, *houbricki*, *laevis*, *neaeroides*, *neozelanica*, *rostrata*, *sansibarica*, *spinulosa*, *striata*, *sumatrana*, *tornata*, *transversa*, *umbonata*, *undosa*.

Subgenus *Dermatomya* Dall, 1889

Type species (by monotypy): *Poromya (Dermatomya) mactroides* Dall, 1889. Recent, Eastern Pacific.

*Shell* surface smooth, without granulation. Ligament external, but deeply sunken. Hinge rather strong, cardinal tooth of right valve large, frequently knob-like.

Included species: *butoni*, *castanea*, *chilensis*, *hyalina*, *mactroides*, *tenuiconcha*, *trosti*.

Subgenus *Cetomya* Dall, 1889

Type species (subsequent designation by GLIBERT, 1936): *Poromya elongata* Dall, 1886b. Recent, West Central Atlantic.

*Shell* surface granulate. Ligament external, not deeply sunken. Hinge plate feeble, cardinal tooth of right valve vestigial or absent.

Included species: *albida*, *butoni*, *elongata*, *eximia* Pelseneer, *malespiniae* Ridewood, *niasensis*?, *orientalis*, *scapha*.

Genus *PERLAPOROMYA* Scarlato & Starobogatov, 1983

Type species (OD): *Poromya perla* Dall, 1908. Recent, East Pacific.

*Shell* surface granulate, with very high, bulbous umbones. Ligament external, but deeply

sunken. Hinge with a strong cardinal tooth in right valve, and a corresponding socket in left valve. Septum with only one pair of ostial openings.

Included species: *perla*.

Genus *CETOCONCHA* Dall, 1886b

Type species (OD): *Lyonsia bulla* Dall, 1881. Recent, tropical West Atlantic.

*Shell* surface granulate or spiculated. Ligament external, slightly sunken. Hinge feeble; anterior cardinal tooth of right valve reduced or absent. Septum with three pairs of ostial openings.

Included species: *alephitinae*, *angoleensis*, *atypha*, *boucheti*, *braziliensis*, *bulla*, *ceylonensis*, *elegans*, *exigua*, *galathea*, *gloriosa*, *indica*, *japonica*, *margarita*, *pelseneeri*, *sarsi*, *smithii*, *tenuissima*, *transversa*.

CATALOGUE OF RECENT SPECIES

In the following alphabetical list, the generic attributions and synonymies are only tentative because, for many species, information is scarce, too scattered or obsolete. Some genera are mainly distinguishable on anatomical grounds, but these data are not available for many species, hence many confusions in generic or even familial allocations (see, for example, POUTIERS, 1984: 285; DELL, 1990: 61).

In two publications dealing with the anatomy of bivalves, RIDEWOOD (1903) and PELSENEER (1911) described the soft parts of some new septibranch species. The shells of these species were later named and described as new, respectively by DALL (1916a, b) and PRASHAD (1932). Although a few authors, among which F. R. Bernard, rejected the names introduced by RIDEWOOD and PELSENEER, these are tentatively included herein. However their somewhat uncertain nomenclatural status has to be reconsidered on an individual basis in a thorough revision of the group.

Names of valid species are in bold. Current generic allocation is in square brackets.

- abbreviata*, *Neaera* Forbes, 1843: 75. Northeast Atlantic, Mediterranean. 55-1350 m. [*Cuspidaria* (*Tropidomya*)]
- abrupta*, *Cuspidaria* (*Rhinoclama*) Allen & Morgan, 1981: 479. Southeast Atlantic. 619-1014 m. [*Cuspidaria* (*Rhinoclama*)]
- abscissa*, *Lyonsiella* Pelseneer, 1911: 76. Indo-Pacific. 700-850 m. [*Laevicordia*]
- abyssicola*, *Cardiomya* Verrill & Bush, 1898: 806. Northwest & West Central Atlantic. 2840-3316 m. [*Cardiomya*]
- abyssicola*, *Lyonsiella* M. Sars, 1869: 257, *nom. nud.* = *Lyonsiella abyssicola* (G.O. Sars, 1872)
- abyssicola*, *Pecchiolia* G. O. Sars, (ex M. Sars MS) 1872: 25. Arctic, North Atlantic. 38-3909 m. [*Lyonsiella*]
- abyssopacifica*, *Cuspidaria* Okutani, 1975b: 74. Northwest Pacific. 3420-5620 m. [*Cuspidaria*]
- accessa*, *Setaliris* Iredale, 1930: 388. Southwest Pacific. 457-550 m. [*Haliris* (*Setaliris*)]
- actoni*, *Neaera* Tiberi, 1855: pl. 1. = *Cardiomya costellata* (Deshayes, 1833)
- acute carinata*, *Cuspidaria* Dautzenberg & Fischer, 1906: 95. East Central Atlantic. 628 m. [*Myonera*]
- acuticostatus*, *Hippagus* Philippi, 1844: 42. Central Atlantic, Mediterranean. 99-4255 m. [*Spinosipella*]
- adamsi*, *Cuspidaria* Thiele, 1934 (*nom. nov. pro Cuspidaria philippinensis* "Hinds", A. Adams, 1864): 948, *nom. nud.* = *Cuspidaria* (*Rhinoclama*) *adamsi* Heppell & Morgan, 1981

- adamsi*, *Cuspidaria (Rhinoclana)* Heppell & Morgan, 1981: 546. West Pacific. 38-46 m. [*Cuspidaria (Rhinoclana)*]
- adelaidis*, *Pholadomya* Hedley, 1916: 29. Antarctic. 110-2154 m. [*Poronyxa*]
- adunca*, *Neaera* Gould, 1861: 24. Northwest Pacific. 10-600 m. [*Cuspidaria (Leionyxa)*]
- adunca*, *Neaera* "Gould" E.A. Smith 1885: 37, *non* Gould 1861. = *Cuspidaria (Vulcanomya) smithii* Dall, 1886b
- aequacostata*, *Verticordia* Howard, 1950: 109. = *Haliris fischeriana* (Dall, 1881)
- aequatorialis*, *Cuspidaria* Thiele & Jaeckel, 1931: 253. Indian Ocean. 693-750 m. [*?Protocuspidaria (Bidentaria)*]
- aethiopica*, *Cuspidaria* Thiele & Jaeckel, 1931: 254. West Indian Ocean. 693 m. [*Halonympha*]
- aethiopica*, *Euciroa* Thiele & Jaeckel, 1931: 248. West Indian Ocean. 818-977 m. [*Euciroa*]
- affinis*, *Verticordia* Thiele & Jaeckel, 1931: 247. West Indian Ocean. 693-1134 m. [*Vertanibus*]
- agulhasensis*, *Cuspidaria* Thiele & Jaeckel, 1931: 253. = *Cuspidaria optima* Sowerby, 1904
- agulhaseusis*, *Lyonsiella* Thiele & Jaeckel, 1931: 250. South Africa. 50-250 m. [*?Lyonsiella*]
- alaskana*, *Lyonsiella* Dall, 1895b: 703. East Pacific. 800-3570 m. [*Policordia (Dalicordia)*]
- albida*, *Poromya (Cetoconcha)* Dall, 1886b: 282. Northwest & West Central Atlantic. 175-1337 m. [*Poromya (Cetomya)*]
- alcocki*, *Cuspidaria* E. A. Smith, 1894: 170. Indo-Pacific. 60-1150 m. [*Cardiomya*]
- aleptinae*, *Cribrosocouche* Krylova, 1991: 133. Southeast Pacific. 1014-1058 m. [*Cetoconcha*]
- allenii*, *Myonera* Poutiers, *nom. nov. pro Cuspidaria (Myonera) atlantica* Allen & Morgan, 1981: 470. North Atlantic. 1427-4680 m. [*Myonera*] (see note 1 below).
- alta*, *Cuspidaria* Verco, 1908: 198. Southern Australia. 165-275 m. [*Cuspidaria (Rhinoclana)*]
- alternata*, *Sphena d'Orbigny in de la Sagra*, 1846: 286. West Central Atlantic. 24-340 m. [*Cardiomya*]
- alveata*, *Cuspidaria* Hedley, 1907b: 362. Southwest Pacific. 1500 m. [*Cardiomya*]
- anatitoides*, *Poromya* Forbes, 1844: 191. = *Poromya granulata* (Nyst & Westendorp, 1839)
- andamanica*, *Cardiomya* Preston, 1916b: 99. Indian Ocean. 3-10 m. [*Cardiomya*]
- angasi*, *Neaera* E. A. Smith, 1885: 47. Southern Australia. 238-750 m. [*Cuspidaria*]
- angolensis*, *Cetococoncha* Allen & Morgan, 1981: 528. Southeast Atlantic. 5124 m. [*Cetoconcha*]
- angularis*, *Neaera* Jeffreys, 1876: 498. North Atlantic. 530-3265 m. [*Myonera*]
- angulata*, *Pecchiolia* Jeffreys, 1882: 933. Northeast Atlantic, Azores. 454-1429m. [*Halicardia*]
- angusticauda*, *Cardiomya* Scarlato, 1972: 124. Northwest Pacific. 135-664m. [*Cardiomya*]
- annandalei*, *Cuspidaria* Preston, 1915: 308. Indian Ocean. Shallow water. [Taxonomic status uncertain]
- antarctica*, *Pholadomya* Hedley, 1916: 28. = ? *Poromya adelaidis* (Hedley, 1916), *fide* DELL, 1990.
- apodema*, *Cuspidaria* Dall, 1916a: 23, *nom. nud.*; 1916b: 407. Northeast Pacific. 1098-2900 m. [*Cuspidaria*]
- approximata*, *Cuspidaria* E. A. Smith, 1896: 373. Indian Ocean. (46?), 400-786 m. [*Cuspidaria*]
- arctica*, *Neaera* M. Sars, 1859: 62. Arctic, North Atlantic. 35-1190 m. [*Cuspidaria*]
- arcuata*, *Neaera* Dall, 1881: 113. West Central Atlantic. 1170 m. [*Cuspidaria*]
- ascoldica*, *Cuspidaria* Scarlato, 1972: 121. Northwest Pacific. 100-800 m. [*Cuspidaria*]
- asiatica*, *Halonympha* Hayami & Kase, 1993: 103. Northwest Pacific. 7-20 m. [*Halonympha*]
- atlanta*, *Halonympha* Allen & Morgan, 1981: 494. Northwest & East Central Atlantic. 2644-3128 m. [*Halonympha*]
- atlantica*, *Cuspidaria* Allen & Morgan, 1981: 455. Atlantic. 530-2154 m. [*Cuspidaria*]
- atlantica*, *Cuspidaria (Myonera)* Allen & Morgan, 1981: 470, *non Cuspidaria atlantica* Allen & Morgan, 1981. = *Myonera allenii* Poutiers, *nom. nov.* (see note 1 below).
- atlantica*, *Policordia* Allen & Turner, 1974: 484. North Atlantic. 458-2186 m. [*Policordia*]
- atlantica*, *Protocuspidaria (Bidentaria)* Allen & Morgan, 1981: 499. North Atlantic, Canaries. 1150-4706 m. [*Protocuspidaria (Bidentaria)*]
- attenuata*, *Neaera* Forbes, 1843: 75. = *Cuspidaria rostrata* (Spengler, 1793)
- atypha*, *Cetoconcha* Verrill & Bush, 1898: 814. Northwest Atlantic. 2602 m. [*Cetoconcha*]
- aupouriu*, *Cuspidaria* Dell, 1950: 21. Southwest Pacific. 137-805 m. [*Cuspidaria (Rhinoclana)*]

- australiensis*, *Verticordia* Hedley, 1907a: 303, *non* E. A. Smith, 1885. = *Verticordia bordensis* Cotton & Godfrey, 1938.
- australiensis*, *Verticordia* E. A. Smith, 1885: 167. Southwest Pacific. 285 m. [*Verticordia*]
- australis*, *Poromya* E. A. Smith, 1885: 54. West Pacific. 83-283 m. [*Poromya*]
- axinoides*, *Verticordia* (*Laevicordia*) Seguenza, 1876a: 111. Mediterranean. 250-400 m. [*Laevicordia*]
- azorica*, *Neaera* E.A. Smith, 1885: 41. Mid Atlantic. 1829 m. [?Cuspidaria]
- balboae*, *Cardiomya* Dall, 1916b: 407. East Central Pacific. 45-170 m. [*Cardiomya*]
- barnardi*, *Cuspidaria* Knudsen, 1970: 139. Atlantic, Indian Ocean. 2178-3828 m. [*Cuspidaria*]
- batialis*, *Cardiomya lindbergi* Scarlato, 1972: 124. = *Cardiomya gouldiana* (Hinds, 1843)
- bebringensis*, *Neaera* Leche, 1883: 438. North Pacific. 18-2900 m. [*Cardiomya*]
- benthedi*, *Cuspidaria* Poutiers, 1984: 289. Indian Ocean. 3700-3716 m. [*Cuspidaria* (*Rhinoclaina*)]
- berenicensis*, *Pecchiolia* Sturany, 1896: 15. Mediterranean. 700 m. [*Haliris*]
- beringiana*, *Dermatomya* Dall, 1916a: 22, *nom. nud.*; 1916b: 406. = *Poromya* (*Dermatomya*) *tenuicoucha* Dall, 1913
- bernardi*, *Bathyneaera* Krylova, 1993: 58. Tropical West Pacific. 7800-7870 m. [*Bathyneaera*]
- bicarinata*, *Myonera* E. A. Smith, 1896: 374. Indian Ocean. 660-1163 m. [*Myonera*]
- bicurinata*, *Neaera* Jeffreys, 1880: 316, *nom. nud.*; 1882: 939. Northeast Atlantic. 1262-2004 m. [*Cuspidaria*]
- bordaensis*, *Verticordia* Cotton & Godfrey, 1938: 149, *nom. nov. pro* *Verticordia australiensis* Hedley, 1907, *non* E. A. Smith, 1885. Southwest Pacific. 16-549 m. [*Verticordia*]
- boucheti*, *Cetoconcha* Poutiers & Bernard *sp. nov.* West Central Pacific. 300-330 m. [*Cetoconcha*]
- brachyrhynchus*, *Cuspidaria* Sturany, 1901: 263. Red Sea. 375-2160 m. [*Cuspidaria*]
- brazieri*, *Neaera* E. A. Smith, 1885: 51. Southwest Pacific. 4-200 m. [*Plectodon*]
- braziliensis*, *Cetoconcha* Allen & Morgan, 1981: 521. Atlantic. 2250-3730 m. [*Cetoconcha*]
- braziliensis*, *Cuspidaria* E. A. Smith, 1915: 104. Southwest Atlantic. 72-100 m. [?Cuspidaria]
- brevirostris*, *Anatiua* Brown, 1829: 11. = *Cuspidaria cuspidata* (Olivier, 1792)
- brevirostris*, *Austroneaera* Powell, 1937: 174. Southwest Pacific. 260 m. [*Cuspidaria* (*Rhinoclaina*)]
- brucei*, *Cuspidaria* Melvill & Standen, 1907: 122. = *Cuspidaria undata* (Verrill, 1884)
- bruuni*, *Cardiomya* Dell, 1956a: 34. South Pacific. 610 m. [*Cardiomya*]
- buccina*, *Cuspidaria* (*Cuspidaria*) Bernard, 1989: 62. Northeast Pacific. 3585 m. [*Cuspidaria*]
- bulla*, *Lyonsia* Dall, 1878: 61, *nom. nud.*; 1881: 107. Northwest Atlantic. 3506-5860 m. [*Cetoconcha*]
- butoni*, *Poromya* (*Cetocoucha*) Prashad, 1932: 327. West Pacific. 70-535 m. [*Poromya* (*Cetomya*)]
- butoni*, *Derinatomya* Dall, 1916a: 22, *nom. nud.*; 1916b: 406. Northeast Pacific. 119-1063 m. [*Poromya* (*Dermatomya*)]
- caduca*, *Cuspidaria* (*Myonera*) E. A. Smith, 1894: 170. Indo-Pacific. 50-1134 m. [*Myonera* (*Rengea*)]
- caelata*, *Verticordia* Verrill, 1882: 566. = *Trigonulina ornata* d'Orbigny, 1846
- californica*, *Cuspidaria* (*Cardiomya*) Dall, 1886b: 296. East Pacific. 15-640 m. [*Cardiomya*]
- cambrica*, *Vertisphaera* Iredale, 1930: 387-388. Southwest Pacific. 146 m. [*Haliris* (*Vertisphaera*)]
- cauadensis*, *Poromya* (*Dermatomya*) Bernard, 1969: 2232. = *Poromya* (*Dermatonya*) *tenuiconcha* Dall, 1913
- canariensis*, *Cuspidaria* (*Myonera*) De Boer, 1985: 102. North Atlantic. 500-2300 m. [*Myonera*]
- capensis*, *Neaera* E. A. Smith, 1885: 45. Southeast Atlantic. 91-564 m. [*Cuspidaria*]
- carinifera*, *Verticordia* Locard, 1898: 208. East Central Atlantic. 2083 m. [*Halicardia*]
- casta*, *Neaera* Hinds, 1843: 77. West Central Pacific. 15 m. [*Cardiomya*]
- castanea*, *Poromya* Habe, 1952b: 156. Northwest Pacific. 30-880 m. [*Poromya*]
- centobi*, *Cuspidaria* Bouchet & Warén, 1979: 218. Northeast Atlantic, Arctic Ocean (*fide* KNUDSEN 1985). 2330-3700 m. [*Myonera*]
- ceylonensis*, *Cetoconcha* Knudsen, 1970: 119. Indian Ocean. 3310 m. [*Cetoconcha*]
- chilensis*, *Cuspidaria* (*Luzonaea*) Dall, 1890: 282. Southeast Pacific. 1238-1895 m. [*Cuspidaria* (*Luzonaea*)]
- chilensis*, *Poromya* (*Derinatonya*) Dall, 1908: 430. Southeast Pacific. 821 m. [*Poromya* (*Dermatonya*)]

- chiensis*, *Neaera* Gray in Griffith & Pidgeon, 1834: 12 & 598. West Pacific. 100-250 m. [*Cuspidaria*]  
*chuni*, *Cuspidaria (Cardiomya)* Thiele & Jaeckel, 1931: 257. Indian Ocean. 400-1134 m. [*Cardiomya*]  
*cinerea*, *Neaera cuspidata* var. Jeffreys, 1865: 54. = *Cuspidaria cuspidata* (Olivi, 1792)  
*circinata*, *Neaera* Jeffreys, 1876: 497. North and Central Atlantic. 564-4382 m. [*Cuspidaria*]  
*cistagemma*, *Euciroa* Kuroda, 1952: 14. = *Euciroa crassa* Thiele & Jaeckel, 1931  
*clathrata*, *Cuspidaria (Soyomya)* Poutiers & Bernard sp. nov. West Pacific. 230 m. [*Cuspidaria (Soyomya)*]  
*claviculata*, *Neaera* Dall, 1881: 112. West Central Atlantic. 183-985 m. [*Halonympha*]  
*cleryana*, *Sphaenia* d'Orbigny, 1842: 708, pl. 83, figs 16-18. Southwest Atlantic. 50-225 m. [*Cardiomya*]  
*cochinensis*, *Cuspidaria* Preston, 1916a: 39. Indian Ocean. Shallow water. [Taxonomic status uncertain]  
*cochlearis*, *Neaera* Hinds, 1844: 98. = *Leptomya cochlearis* (Hinds, 1844) [Semelidae]  
*colpodes*, *Cuspidaria* Dautzenberg & Fischer, 1897b: 223. Azores, West Indian Ocean. 693-1644 m. [*?Protocuspidaria (Bidentaria)*]  
*compressa*, *Lyonsiella* Allen & Turner, 1974: 458. Northeast Atlantic. 119 m. [*Lyonsiella*]  
*compressa*, *Mytilimeria* Locard, 1898: 211. Not a *Halicardia* (see note 2 below).  
*concentrica*, *Cuspidaria* Thiele, 1912: 233. Antarctic. 351 m. [*Cuspidaria*]  
*concinna*, *Neaera* Hinds, 1843: 77. Habitat unknown. [*Cardiomya*]  
*congenita*, *Neaera* E. A. Smith, 1885: 52. West Central Atlantic. 800 m. [*Halonympha*]  
*consimilis*, *Cuspidaria nobilis* Habe, 1961: 146 & App.42. = *Cuspidaria nobilis* (A. Adams, 1864)  
*consociatu*, *Neaera* E. A. Smith, 1885: 41. West Central Atlantic. 340-850 m. [*Cuspidaria*]  
*contracta*, *Neaera* Jeffreys, 1882: 941. Northeast Atlantic. 1354-2967 m. [*Cuspidaria*]  
*convexa*, *Cuspidaria* Pelseneer, 1911: 80. Tropical West Pacific. 100-694 m. [*Cuspidaria*]  
*convexa*, *Cuspidaria (Cuspidaria)* Prashad, 1932: 329. = *Cuspidaria convexa* Pelseneer, 1911  
*cordata*, *Lyonsiella* Verrill & Bush, 1898: 818. Northwest Atlantic. 2602-3338 m. [*Policordia*]  
*corpulenta*, *Neaera costellata* var. Dall, 1881: 111. = *Cardioniya costellata* (Deshayes, 1833)  
*corrugata*, *Cuspidaria (Cuspidaria)* Prashad, 1932: 329. Tropical West Pacific. 38-320 m. [*Cuspidaria*]  
*costata*, *Anatina* Sowerby, 1834: 87. Tropical East Pacific. 4-84 m. [*Cardiomya*]  
*costata*, *Neaera* Bush, 1885: 472, non Sowerby, 1834. = *Cardioniya ornatissima* (d'Orbigny, 1846)  
*costellata*, *Corbula* Deshayes, 1833: 86. North Atlantic, Mediterranean. 5-2000 m. [*Cardiomya*]  
*costenniens*, *Verticordia (Spinospella)* Poutiers, 1981: 351. Tropical West Pacific. 750-925 m.  
[*Spinospella*]  
*cowani*, *Cuspidaria (Cuspidaria)* Bernard, 1967: 2629. Northeast Pacific. 1318 m. [*Cuspidaria*]  
*crassa*, *Euciroa* Thiele & Jaeckel, 1931: 248. Indo-Pacific. 136-1463 m. [*Euciroa*]  
*crebrilirata*, *Verticordia (Verticordia)* Prashad, 1932: 324. Tropical West Pacific. 564 m. [*Haliris*]  
*cuneata*, *Verticordia (Vertambitus)* Kuroda, 1952: 8. Northwest Pacific. 200 m. [*Vertambitus*]  
*curta*, *Lyonsiella* Poutiers, 1984: 298. West Indian Ocean. 3700-3716 m. [*Lyonsiella*]  
*curta*, *Neaera* Jeffreys, 1876: 495, nom. nud.; 1882: 943. Arctic, North Atlantic. 32-2338 m. [*Cardiomya*]  
*curta*, *Neaera cuspidata* var. Jeffreys, 1865: 54. = *Cuspidaria cuspidata* (Olivi, 1792)  
*curta*, *Neaera multicostata* var. Verrill, 1882: 560, non *Neaera curta* Jeffreys, 1882. = *Cardioniya striata* (Jeffreys, 1876)  
*curta*, *Poromya* Sowerby, 1904: 17. Southwest Indian Ocean. 805 m. [*Poromya*]  
*cuspidata*, *Neaera* Hinds, 1843: 76, non Olivi, 1792. Northwest Pacific. 154 m. Nom. dub.  
*cuspidata*, *Tellina* Olivi, 1792: 101. Northeast & East Central Atlantic, Mediterranean. 20-1850 m.  
[*Cuspidaria*]  
*cymata*, *Poromya* Dall, 1890: 289. Southwest Atlantic. 72-108 m. [*Poromya*]  
*dalli*, *Euciroa* Pilsbry, 1911: 523. = *Euciroa eburnea* (Wood-Mason & Alcock, 1891)  
*dautzenbergi*, *Myonera* Prashad, 1932: 334. Northwest Pacific to Indonesia. 715-959 m. [*Myonera*]  
*delectabile*, *Euciroa* Dell, 1956b: 42. = *Euciroa galatheae* (Dell, 1956)  
*delli*, *Cuspidaria* Knudsen, 1970: 141. Southwest Pacific. 4400 m. [*Cuspidaria*]

- demistriata*, *Cuspidaria (Myonera)* Allen & Morgan, 1981: 469. = *Bathyneaera hadalis* (Knudsen, 1970)
- densicostata*, *Verticordia* Locard, 1898: 202. Central Atlantic. 1002-2325 m. [*Policordia*]
- depressa*, *Neaera* Jeffreys, 1882: 940. East Atlantic, Mediterranean. 164-2351 m. [*Halomyrophida*]
- deshayesiana*, *Verticordia* Fischer, 1862: 35. Indo-Pacific. 40-693 m. [*Spinosipella*]
- diagonalis*, *Cuspidaria (Tropidonya)* Allen & Morgan, 1981: 487. Southeast Atlantic. 527-542 m. [*Cuspidaria (Tropidonya)*]
- didyma*, *Neaera* Hinds, 1843: 78. Tropical East Pacific. 18-48 m. [*Cardionya*]
- diontedeu*, *Policordia* Dall, Bartsch & Rehder, 1938: 217. Mid-North Pacific. 44-530 m. [*Policordia*]
- disa*, *Cardiomya (Labromysa)* Bernard, 1989: 64. Northeast and Northwest Pacific, tropical West Indian Ocean, tropical West Atlantic. 3700-6850 m. [*Bathyneaera*]
- dispar*, *Cuspidaria (Myonera)* Dall, Bartsch & Rehder, 1938: 225. Northwest & Mid-North Pacific. 400-914 m. [*Myonera*]
- dissociata*, *Cuspidaria* Sturany, 1901: 262. Red Sea. 805 m. [*Cuspidaria*]
- dorsirecta*, *Cuspidaria* Verco, 1908: 198. Southeast Indian Ocean, Southern Australia. 73-1150 m. [*Cuspidaria (Rhinoclama)*]
- dubia*, *Cuspidaria (Myonera)* Pelseneer, 1911: 80. Indo-Pacific. 200-2798 m. [*Cuspidaria (Rhinoclama)*]
- dubia*, *Cuspidaria (Rhinoclama)* Prashad, 1932: 333. = *Cuspidaria (Rhinoclama) dubia* (Pelseneer, 1911)
- dulcis*, *Cuspidaria (Cardionya)* Pilsbry & Lowe, 1932: 10. = *Cardiomya costata* (Sowerby, 1834)
- eburnea*, *Verticordia (Euciroa)* Wood-Mason & Alcock, 1891: 447. Indo-Pacific. 340-1500 m. [*Euciroa*]
- ecuadoriana*, *Cuspidaria (Cardiomya)* Olsson, 1961: 465. Tropical East Pacific. 55-146 m. [*Cardiomya*]
- elegans*, *Cribrosoconcha* Krylova, 1991: 135. Southeast Pacific. 218-575 m. [*Cetoconcha*]
- elegans*, *Neaera* Hinds, 1843: 76. Indo-Pacific. 13-200 m. [*Cuspidaria*]
- elegantissima*, *Euciroa* Dall, 1878: 61, nom. nud. = *Euciroa elegantissima* (Dall, 1881)
- elegantissima*, *Verticordia* Dall, 1881: 106. West Central Atlantic. 300-1500 m. [*Euciroa*]
- elliptica*, *Cuspidaria (Cuspidaria)* Di Geronimo, 1974: 157. Mediterranean. 2300 m. [? *Cuspidaria*]
- elongata*, *Poromya (Cetoconcha)* Dall, 1886b: 283. West Central Atlantic. 183-364 m. [*Poromya (Cetomya)*]
- equatorialis*, *Poromya (Dermatomya)* Dall, 1908: 429. = *Poromya (Dermatomya) mactroides* Dall, 1889
- ericia*, *Verticordia* Hedley, 1911: 96. South and Central Indo-Pacific. 146-805 m. [*Spinosipella*]
- erma*, *Cuspidaria* Cotton, 1931: 347. Southern Australia. 148-550 m. [*Cuspidaria*]
- exarata*, *Cuspidaria* Verco, 1908: 199. Southern Australia. 190 m. [*Cuspidaria*]
- excoriata*, *Verticordia* Poutiers, 1984: 297. West Indian Ocean. 3700 m. [*Vertambitus*]
- exigua*, *Cetoconcha* Poutiers & Bernard, sp. nov. West Pacific. 970 m. [*Cetoconcha*]
- exigua*, *Neaera* Jeffreys, 1876: 496. Arctic, North Atlantic. 640-1836 m. [*Cuspidaria*]
- eximia*, *Poromya* Pelseneer, 1911: 78. Indo-Pacific. 50-1190 m. [*Poromya (Cetomya)*]
- eximia*, *Poromya (Cetoconcha)* Prashad, 1932: 327. = *Poromya (Cetomya) eximia* Pelseneer, 1911
- expansa*, *Verticordia?* Prashad, 1932: 324. West Pacific. 835 m. [*Verticordia*]
- extenta*, *Policordia (Argustebranchia)* Ivanova, 1977: 182. Northwest Pacific. 8220-8430 m. [*Policordia (Angustebranchia)*]
- fairchildi*, *Cuspidaria* Suter, 1908: 372. Southwest Pacific. 137-640 m. [*Cuspidaria*]
- fallax*, *Neaera* E. A. Smith, 1885: 49. West Pacific. 283 m. [? *Cardiomya (Karodamya)*]
- ferruginea*, *Halicardia* Di Geronimo, 1974: 158. Mediterranean. 2300-2400 m. [*Halicardia*]
- filatovae*, *Cardiomya* Scarlato, 1972: 127. Northwest Pacific. 3350 m. [*Cardiomya*]
- filatovae*, *Cuspidaria* Bernard, 1979: 14. Northeast Pacific. 3500-4882 m. [*Cuspidaria (Rhinoclama)*]
- filocarinata*, *Neaera* E. A. Smith, 1885: 44. = *Cuspidaria (Rhinoclama) notabilis* (Jeffreys, 1876)
- fiulayi*, *Anstroneaera* Powell, 1937: 175. Southwest Pacific. 110 m. [*Cuspidaria (Rhinoclama)*]
- fischeri*, *Mytilimeria* Jeffreys, 1880: 316; 1881: 384. Nom. nud. = *Halicardia fischeri* (Locard, 1898)
- fischeri*, *Mytilimeria* Locard, 1898: 212 (ex Jeffreys MS). Northeast Atlantic. 1140-2650 m. [*Halicardia*]

- fischeriana*, *Verticordia* Dall, 1881: 106. West Atlantic, East Pacific. 80-510 m. [*Haliris*]  
*flexuosa*, *Mytilimeria* Verrill & Smith in Verrill, 1881: 302. North Atlantic. 137-2330 m. [*Halicardia*]  
*flexuosa*, *Poromya* Yokoyama, 1922: 173. Northwest Pacific. 30-350 m. [*Poromya*]  
*fluctuosa*, *Myonera* Kuroda, 1948: 25. = *Myonera caduca* (E. A. Smith, 1894)  
*formosa*, *Cuspidaria* Verrill & Bush, 1898: 803. Northwest Atlantic. 2173 m. [*Cuspidaria*]  
*formosa*, *Lyonsia* Jeffreys, 1874: 112, nom. nud.; 1880: 316, nom. nud.; 1882: 930. Atlantic, Mediterranean; Indian Ocean & Pacific? (MORTON, 1985a) 366-3783 m. [? *Lyonsiella*] (see note 3 below).  
*forticostata*, *Cuspidaria* (*Cardiomya*) Sowerby, 1904: 18. Southwest Indian Ocean. 805 m. [*Cardioniya*]  
*fortisculpta*, *Cuspidaria* (*Cardioniya*?) Kuroda, 1948: 20. Northwest Pacific. 100-200 m. [*Cardioniya* (*Kurodamya*)]  
*fragilis*, *Lyonsiella* Allen & Turner, 1974: 456. North Atlantic. 1102-1470 m. [*Lyonsiella*]  
*fragilis*, *Neaera* A. Adams, 1856: 226. = *Theora fragilis* (A. Adams, 1856) [Semelidae]  
*fragilissima*, *Neaera* E. A. Smith, 1885: 53. Southwest Indian Ocean. 349 m. [*Cardiomya*]  
*fraterna*, *Cuspidaria* Verrill & Bush, 1898: 803. Northwest Atlantic. 552-1800 m. [*Cuspidaria*]  
*frieli*, *Lyonsiella* Allen & Turner, 1974: 440. North Atlantic. 3301-4429 m. [*Laevicordia*]  
*fujitai*, *Cuspidaria* (*Cardioniya*) Kuroda, 1948: 18. Northwest Pacific. 100-300 m. [*Cardioniya*]  
*galatheae*, *Cetoconcha* Knudsen, 1970: 120. Southwest Pacific. 4400 m. [*Cetoconcha*]  
*galatheae*, *Laevicordia* Knudsen, 1970: 128. West Indian Ocean. 4820 m. [*Laevicordia*]  
*galatheae*, *Questimya* Dell, 1956a: 33. Southwest Pacific. 475-622 m. [*Euciroa*]  
*garretti*, *Myonera* Dall, 1908: 434. Tropical East Pacific. 1644 m. [*Myonera*]  
*gemma*, *Cardioniya* Verrill & Bush, 1898: 809. = *Cardiomya costellata* (Deshayes, 1833)  
*genima*, *Lyonsiella* Verrill, 1880: 396. North Atlantic, Mediterranean. 73-3917 m. [*Policordia*]  
*gigantea*, *Cuspidaria* (*Cuspidaria*) Prashad, 1932: 329. Indo-Pacific. 100-1030 m. [*Cuspidaria*]  
*gigantea*, *Neaera* Verrill, 1884: 223. Northwest Atlantic. 2286-3506 m. [*Myonera*]  
*gilchristi*, *Poromya* Sowerby, 1904: 15. Southwest Indian Ocean. 86-99 m. [*Poromya*]  
*gilchristi*, *Cuspidaria* (*Cardioniya*) Sowerby, 1904: 18. Southwest Indian Ocean. 73-229 m. [*Cardioniya*]  
*glacialis*, *Neaera* G. O. Sars, 1878: 88. Arctic, North Atlantic. 71-2500 m. [*Cuspidaria*]  
*globulosa*, *Bathyneaera* Krylova, 1993: 55. North Atlantic. 4440-4480 m. [*Bathyneaera*]  
*gloriosa*, *Poromya* (*Cetoconcha*) Prashad, 1932: 326. Tropical West Pacific. 150-400 m. [*Cetoconcha*]  
*glypta*, *Cardiomya* Bush in Verrill & Bush, 1898: 810, nom. nov. pro *Neaera costata* Bush, 1885 non Sowerby, 1834. = *Cardiomya ornatissima* (d'Orbigny, 1846)  
*gouldi*, *Halicardia* Dall, Bartsch & Rehder, 1938: 218. Mid-North Pacific. Depth unknown. [*Halicardia*]  
*gouldiana*, *Neaera* Hinds, 1843: 77. West Pacific. 13-1030 m. [*Cardiomya*]  
*gracilis*, *Cuspidaria* "(G. O. Sars)" NORDSIECK, 1969: 176. = *Cuspidaria gracilis* (Jeffreys, 1882)  
*gracilis*, *Neaera* Jeffreys, 1882: 938. Arctic, Northeast Atlantic. 70-2032 m. [*Cuspidaria*]  
*granatiua*, *Poromya* (?) Dall, 1881: 109. = *Basterotia quadrata* (Hinds, 1843) [Sportellidae]  
*grandis*, *Lyonsiella* E. A. Smith, 1885: 74. South Atlantic. 3470 m. [*Policordia*]  
*granifera*, *Questimya* Cotton, 1931: 345. Southwest Pacific. 20-250 m. [*Euciroa*]  
*granosissima*, *Poromya* Sowerby, 1904: 16. Southwest Indian Ocean. 49-165 m. [*Poromya*]  
*granulata*, *Corbula*? Nyst & Westendorp, 1839: 6. North Atlantic, Mediterranean. 30-1262 m. [*Poromya*]  
*granulata*, *Ectorisma* Tate, 1892: 127. = *Poromya laevis* E. A. Smith, 1885.  
*granulata*, *Neaera* Dall, 1881: 111. West Central Atlantic. 37-274 m. [*Plectodon*]  
*granulata*, *Verticordia* Seguenza, 1858: 356. North & Central Atlantic, Mediterranean. 55-1245 m. [*Haliris*]  
*granulifera*, *Pecchiolia* Verrill, 1885: 434. Northwest Atlantic. 2450-3400 m. [*Verticordia*]  
*granuloderma*, *Poromya granuloderma* Scarlato, 1981: 428. Northwest Pacific. 300-664 m. [*Poromya*]  
*greenii*, *Cuspidaria* (*Cardiomya*) E. A. Smith, 1889: 423. Northeast Atlantic. 1829 m. [*Cardioniya*]  
*guineensis*, *Cuspidaria* Knudsen, 1970: 143. East Central Atlantic. 2550 m. [? *Cuspidaria*]

- guineensis*, *Verticordia* Thiele & Jaeckel, 1931: 246. East Central Atlantic. 2278 m. [*Verticordia*]  
*haasi*, *Cuspidaria* Knudsen, 1970: 145. Tropical East Pacific. 3570 m. [*Cuspidaria*]  
*hadalis*, *Cuspidaria* Knudsen, 1970: 146. West Atlantic, tropical West Indian Ocean, West Pacific.  
     1135-8430 m. [*Bathyneaera*]  
*halei*, *Cuspidaria* Cotton & Godfrey, 1938: 158. Southern Australia. 238-550 m. [*Cuspidaria*]  
*halimera*, *Cuspidaria* (*Leiomya*) (*Rhioclama*) Dall, 1886b: 300. North Atlantic. 1337-2934 m.  
     [*Cuspidaria* (*Rhinoclama*)]  
*hancocki*, *Verticordia* (*Trigonulina*) Bernard, 1969: 2233. Tropical East Pacific. 73-110 m. [*Trigonulina*]  
*hawaiensis*, *Cuspidaria* (*Cuspidaria*) Dall, Bartsch & Rehder, 1938: 226. Mid-North Pacific. 468-  
     874 m. [*Cuspidaria*]  
*hawaiensis*, *Euciroa* "Dall, Bartsch & Redher" HABE, 1964: 212, *nomin. null.* Error for *Euciroa gouldi*  
     Dall, Bartsch & Rehder, 1938.  
*hayashii*, *Poromya* Habe, 1958: 175, 180. Northwest Pacific. 50-200 m. [*Poromya*]  
*hindiana*, *Neaera* A. Adams, 1864: 207. Northwest Pacific. 50-200 m. [*Cuspidaria*]  
*hirasei*, *Cuspidaria* Kuroda, 1948: 10. = *Cuspidaria steindachneri* Sturany, 1901  
*horrida*, *Laevicordia* Allen & Turner, 1974: 507. Northeast Atlantic. 2862-2886 m. [*Laevicordia*]  
*houbricki*, *Halicardia* Poutiers & Bernard sp. nov. Borneo. 1629 m. [*Halicardia*]  
*houbricki*, *Poromya* (*Poromya*) Bernard, 1989: 65. Northeast Pacific. 95-100 m. [*Poromya*]  
*hyalina*, *Neaera* Hinds (ex Sowerby MS), 1843: 76. Northwest Pacific. Depth unknown. [?]*Cuspidaria*[  
*hyalina*, *Poromya* (*Dermatoomya*) Bernard, 1989: 66. Northeast Pacific. 4882 m. [*Poromya* (*Derma-*  
     *tomya*)]  
*illevis*, *Poromya* Hedley, 1913: 265, *nomin. nov. pro Ectorisma granulata* Tate, 1892 non *Poromya*  
     *granulata* (Nyst & Westendorp, 1839). = *Poromya laevis* E.A. Smith, 1885  
*imbricata*, *Neaera* Jeffreys, 1880: 316; 1881: 383; 1882: 942. *Nom. nud.* = *Cuspidaria imbricata*  
     Locard, 1898  
*imbricata*, *Cuspidaria* Locard (ex Jeffreys MS), 1898: 187. Northeast Atlantic. 1107-1960 m.  
     [*Cuspidaria*]  
*indica*, *Cetoconcha* Ray, 1951: 187. Indian Ocean. Depth unknown. [*Cetoconcha*]  
*infelix*, *Cuspidaria* Thiele, 1912: 233. Antarctic. 91-752 m. [*Cuspidaria*]  
*inflata*, *Neaera* Jeffreys, 1882: 942. North Atlantic. 1000-2000 m. [*Cuspidaria* (*Leiomya*)]  
*inornata*, *Verticordia* Thiele & Jaeckel, 1931: 245. Southwest Indian Ocean. 49-229 m. [*Verticordia*]  
*insculpta*, *Pecchiolia* Jeffreys, 1874: 112, *nomin. nud.*; 1882: 932. = *Policordia gemina* (Verrill, 1880)  
*insculpta*, *Verticordia* (*Laevicordia*) Seguenza, 1876a: 112. Mediterranean. Depth unknown. [*Laevi-*  
     *cordia*]  
*insolita*, *Policordia* Allen & Turner, 1974: 502. North Atlantic. 1546-2178 m. [*Policordia*]  
*intermedia*, *Cetoconcha* (*eximia* var?) Habe, 1952b: 158. = *Poromya* (*Cetomya*) *eximia* Pelseneer, 1911  
*iridella*, *Cuspidaria* (*Pseudoneaera*) Kuroda, 1948: 25. = *Pseudoneaera semipellucida* (Kuroda, 1948)  
*iridescent*, *Neaera* Hinds, 1843: 78. = *Theora iridescent* (Hinds, 1843) [Semelidae]  
*isocardiooides*, *Poromya* (*Cetoconcha*) Dautzenberg & Fischer, 1897a: 30. = *Poromya toruata* (Jeffreys,  
     1876)  
*isolirata*, *Cardiomya* Bernard, 1969: 2231. = *Cardiomya pectinata* (Carpenter, 1865)  
*iturupica*, *Cardiomya* Scarlato, 1972: 127. Northwest Pacific. 414 m. [*Cardiomya*]  
*ivanovae*, *Policordia* Poutiers & Bernard, *nomin. nov. pro* *Policordia japonica* Ivanova, 1977, *nou* Habe,  
     1961. Northwest Pacific. 3042 m. [*Policordia*]  
*jaffaensis*, *Verticordia* Cotton & Godfrey, 1938: 151. Southwest Pacific. 183-549 m. [*Haliris*]  
*japonica*, *Cetoconcha* Habe, 1952b: 159. West Pacific. 175-650 m. [*Cetoconcha*]  
*japonica*, *Cuspidaria* Kuroda, 1948: 14. Northwest Pacific. 100-300 m. [*Caspidaria*]  
*japonica*, *Lyoniella* Habe, 1952a: 269, *nomin. nud.*; 1961: 145 & App.41. = *Policordia pilula* (Pelseneer,  
     1911)  
*japonica*, *Policordia* (*Latebranchia*) Ivanova, 1977: 193, *nou* Habe, 1961. = *Policordia ivanovae*  
     Poutiers & Bernard  
*japonica*, *Verticordia* A. Adams, 1862: 224. = *Spinospipella deshayesiana* (Fischer, 1862)

- jeffreysi*, *Lyonsiella* Friele, 1879: 269. Northeast Atlantic, Arctic Ocean (*fide* KNUDSEN, 1985).  
1198-4429 m. [**Policordia**]  
*jeffreysi*, *Lyonsiella* E. A. Smith, 1885: 73, *non* Friele, 1879. = *Laevicordia smidti* (Friele, 1886)  
*jeffreysi*, *Neaera* Dall, 1881: 111. Northwest & West Central Atlantic. 849-2022 m. [**Cuspidaria**]  
*jugosa*, *Neaera* G. O. Sars, 1878: 88, *non* Wood, 1850. = *Cuspidaria lamellosa* (G. O. Sars, 1878)  
*jugosa*, *Neaera* Wood, 1850: 272. Northeast Atlantic, Mediterranean. 200-1100 m. [**?Cuspidaria**]  
*kashiuana*, *Cardiomya* Okutani & Sakurai, 1964: 20. Northwest Pacific. 200-1030 m. [**Cardiomya**]  
*kawamurai*, *Cuspidaria* Kuroda, 1948: 11. = *Cuspidaria* (*Cuspidaria*) *gigantea* Prashad, 1932  
*kerguelensis*, *Neaera* E. A. Smith, 1885: 46. Antarctic. 60-574 m. [**Cuspidaria**]  
*knudseni*, *Cuspidaria* (*Cardiomya*) Allen & Morgan, 1981: 466. Southwest & North Atlantic.  
1661-3806 m. [**Cardiomya**]  
*korenii*, *Embla* Lovén, 1846: 200. = *Poromya grannata* (Nyst & Westendorp, 1839)  
*kurilensis*, *Dermatomya* Scarlato, 1981: 427. = *Poromya* (*Dermatomya*) *temuiconcha* Dall, 1913  
*kurodai*, *Cuspidaria* Okutani, 1975a: 196. Northwest Pacific. 158-177 m. [**Cuspidaria**]  
*kurokijii*, *Cuspidaria* Okutani, 1972: 126. Northwest Pacific. 130-190 m. [**Cuspidaria** (*Soyomya*)]  
*kyushuensis*, *Cuspidaria* Okutani, 1962: 35. Northwest Pacific. 520-760 m. [**Cuspidaria**]  
*lactea*, *Neaera costellata* var. Jeffreys, 1865: 50. = *Cardiomya costellata* (Deshayes, 1833)  
*laevigata*, *Policordia* (*Angustebranchia*) Ivanova, 1977: 184. West Pacific. 8160-8900 m. [**Policordia**]  
(*Angustebranchia*)  
*laevis*, *Poromya* E. A. Smith, 1885: 55. South Pacific. 15-805 m. [**Poromya**]  
*lamellifera*, *Neaera* Dall, 1881: 113. Northwest Atlantic. 153-457 m. [**Myonera**]  
*lamellosa*, *Neaera* M. Sars, 1859: 62; 1869: 257. *Nom. nud.* = *Cuspidaria lamellosa* (G. O. Sars, 1878)  
*lamellosa*, *Neaera* G. O. Sars, 1878 (*ex* M. Sars MS): 88. North Atlantic. 91-1015 m. [**Cuspidaria**]  
*lamotheti*, *Verticordia* Dautzenberg & Fischer, 1897a: 30. East Atlantic, West Indian Ocean. 126-  
608 m. [**Haliris**]  
*lanieri*, *Cuspidaria* Strong & Hertlein, 1937: 163. East Central Pacific. 37-402 m. [**Cardiomya**]  
*lata*, *Neaera* Hinds, 1843: 79. = *Theora lata* (Hinds, 1843) [Semelidae]  
*latesulcata*, *Neaera* Tenison-Woods, 1878: 123. West Pacific. 30 m. [**Cuspidaria**]  
*laticella*, *Myonera* Dall, 1886b: 305. West Atlantic. 3111 m. [**Bathyneaera**]  
*ledaeformis*, *Cuspidaria* Dautzenberg & Fischer, 1897a: 29. Central Atlantic. 1300-1600 m.  
[**?Halonympha**]  
*leiomyoides*, *Cuspidaria* Poutiers, 1981: 340. Tropical West Pacific. 415-510 m. [**Halonympha**]  
*leonina*, *Deriuatoyma* Dall, 1916a: 22, *nom. nud.*; 1916b: 406. = *Poromya* (*Dermatomya*) *temuiconcha*  
Dall, 1913  
*levifrons*, *Cuspidaria* Cotton, 1930: 235. Southern Australia. 550 m. [**Cardiomya** (*Kurodamya*)]  
*ligula*, *Cuspidaria* Yokoyama, 1922: 169. Northwest Pacific. 10-300 m. [**Plectodon**]  
*limatula*, *Neaera* Dall, 1881: 112. Northwest & West Central Atlantic. 230-1000 m. [**Myonera**]  
*lindbergi*, *Cardiomya* Scarlato, 1972: 125. = *Cardiomya gouldiana* (Hinds, 1843)  
*lisbethae*, *Policordia* Knudsen, 1970: 132. East Central Atlantic. 2690 m. [**Policordia**]  
*lischkei*, *Cuspidaria* (*Myonera*) E. A. Smith, 1891: 438. Northwest Pacific. 3429 m. [**Myonera**]  
*longirostris*, *Anatina* Lamarck, 1818: 463. = *Cuspidaria rostrata* (Spengler, 1793)  
*lubungensis*, *Cuspidaria* Poutiers, 1981: 348. Tropical West Pacific. 191-195 m. [**Cuspidaria**]  
*lucifuga*, *Cuspidaria* P. Fischer, 1887: 1155, *nom. nud.*; Locard, 1898: 184. = *Cuspidaria undata*  
(Verrill, 1884)  
*lyrata*, *Neaera* Hinds, 1844: 97. = *Raeta lyrata* (Hinds, 1844) [Mactridae]  
*macrorbynchus*, *Cuspidaria* E. A. Smith, 1895: 12. Indo-Pacific. 400-1190 m. [**Cuspidaria**]  
*mactroides*, *Poromya* (*Dermatomya*) Dall, 1889: 448. East Pacific. 637-3060 m. [**Poromya** (*Derma-*  
*tomya*)]  
*maculata*, *Policordia* (*Angustebranchia*) Ivanova, 1977: 184. West Pacific. 9000-9050 m. [**Policordia**]  
(*Angustebranchia*)  
*magnifica*, *Lyonsiella* Dall, 1913: 595. Tropical East Pacific. 115-300 m. [**Lyonsiella**]

- uijor*, *Cuspidaria rostrata* var. Dautzenberg & Fischer, 1897b: 220. = *Cuspidaria rostrata* (Spengler, 1793)  
*makiyamai*, *Verticordia (Haliris)* Habe in Kuroda, 1952: 10. = *Haliris (Setaliris) pygmaea* (Kuroda, 1952)  
*malespinæ*, *Cetocoucha* Dall, 1916a: 22, nom. nud.; 1916b: 407. = *Poromya (Cetomya) malespinæ* Ridewood, 1903  
*mulespinæ*, *Poromya* Ridewood, 1903: 272. Northeast Pacific. 2104-2871 m. [*Poromya (Cetomya)*]  
*maoria*, *Halicardia* Dell, 1978: 162. Southwest Pacific. 676-713 m. [*Halicardia*]  
*murgurita*, *Poromya (Cetoconcha)* Dall, 1886b: 284. West Central Atlantic. 715-1864 m. [*Cetoconcha*]  
*marmorea*, *Cuspidaria (Rhinoclama)* Bernard, 1989: 64. = *Cuspidaria (Rhinoclama) filatovae* (Bernard, 1979)  
*maxima*, *Cuspidaria* Dautzenberg & Fischer, 1897a: 28. East Atlantic. 1850-3200 m. [*Cuspiduria*]  
*media*, *Cuspidaria* Verrill & Bush, 1898: 800. Northwest Atlantic. 115-283 m. [*Cuspidaria*]  
*media*, *Lyonsiella* Okutani, 1962: 30. = *Policordia pilula* (Pelseneer, 1911)  
*niediopacifica*, *Euciroa* Kosuge, 1979: 35. Central Pacific. 170-370 m. [*Euciroa*]  
*meridionalis*, *Neaera* E. A. Smith, 1885: 43. South Indian Ocean. 3566 m. [*Cuspidaria*]  
*mexicana*, *Myonera* Knudsen, 1970: 134. East Pacific. 2110-3557 m. [*Myonera*]  
*microdonta*, *Poromya (Cetomya)* Dall, 1890: 290. = *Poromya tornata* (Jeffreys, 1876)  
*microrhina*, *Cuspidaria rostrata* var. Dall, 1886b: 295. Northwest Atlantic. 183-931 m. [*Cuspidaria*]  
*millegeminata*, *Euciroa* Kuroda & Habe in Kuroda, 1952: 14. West Pacific. 100-365 m. [*Euciroa*]  
*minor*, *Pseudouneaera* Thiele & Jaeckel, 1931: 258. West Indian Ocean. 50 m. [*Pseudoneaera*]  
*mitis*, *Cuspidaria (Cuspidaria)* Prashad, 1932: 328. Indo-Pacific. 500-1620 m. [*Cuspidaria*]  
*moeshimaensis*, *Verticordia (Haliris)* Habe, 1953: 133. = *Haliris inmulticostata* (A. Adams, 1862)  
*moluccana*, *Neaera* Adams & Reeve, 1850: 84. = *Cuspidaria elegans* (Hinds, 1843)  
*monosteira*, *Cuspidaria* (?) Dall, 1890: 281. West Central Atlantic. 850-1864 m. [*Verticordia*]  
*morelandi*, *Cuspidaria* Dell, 1956b: 39. South Pacific. 238-549 m. [*Cuspiduria*]  
*morioria*, *Cuspidaria* Dell, 1956b: 40. South Pacific. 238 m. [*Cuspidaria*]  
*morriseae*, *Cuspidaria* Poutiers & Bernard sp. nov. West Pacific. 230 m. [*Cuspidaria*]  
*multicarinata*, *Cuspidaria (Cardionya)* Prashad, 1932: 322. = *Cardionya alcocki* (E. A. Smith, 1894)  
*multicostata*, *Neaera* Verrill & Smith in Verrill, 1880: 398. = *Cardiomya striata* (Jeffreys, 1876)  
*inmulticostata*, *Verticordia* A. Adams, 1862: 224. West Pacific. 50-450 m. [*Haliris*]  
*murrayi*, *Lyonsiella* Knudsen, 1967: 297. West Indian Ocean. 1207-1463 m. [*Policordia*]  
*murrayi*, *Neaera* E. A. Smith, 1885: 319. Mid-North Pacific. 5304 m. [*Myonera (Rengea)*]  
*nasuta*, *Cuspidaria* Sowerby, 1904: 16, non A. Adams, 1864. = *Cuspidaria capensis* (E. A. Smith, 1885)  
*nasuta*, *Neaera* A. Adams, 1864: 207. Northwest Pacific. 100-150 m. [*Cuspidaria*]  
*natalensis*, *Cuspidaria* Knudsen, 1970: 148. Southwest Indian Ocean. 2640 m. [*Cuspidaria*]  
*neaeroides*, *Poromya* Seguenza, 1876b: 270. North and Central Atlantic, Mediterranean. 208-1350 m.  
[*Poromya*]  
*neozelanica*, *Ectorisua* Dell, 1956b: 43. South Pacific. 549 m. [*Poromya*]  
*niusensis*, *Poromya* Thiele & Jaeckel, 1931: 252. East Indian Ocean. 660 m. [*? Poromya (Cetomya)*]  
*nipponensis*, *Halicardia* Okutani, 1957: 30. Northwest Pacific. 400-1500 m. [*Halicardia*]  
*nipponica*, *Cuspidaria (Cardiomya) abyssicola* Okutani, 1962: 35. Northwest Pacific. 360-1480 m.  
[*Cardiomya*]  
*nitens*, *Cuspidaria* Locard, 1898: 181. Northeast Atlantic. 905-2200 m. [*Cuspidaria (Rhinoclama)*]  
*nitida*, *Poromya* Adams & Reeve, 1850: 43. = *Leptomya nitida* (Adams & Reeve, 1850) [Semelidae]  
*nitida*, *Thracia* Verrill, 1884: 221. = *Cetocoucha bulla* (Dall, 1881)  
*nobilis*, *Neaera* A. Adams, 1864: 207. West Pacific. 50-300 m. [*Cuspidaria*]  
*notabilis*, *Neaera* Jeffreys, 1876: 497. Northeast & East Central Atlantic. 1100-4734 m. [*Cuspidaria*]  
(*Rhinocluma*)  
*novecostatus*, *Hippagus* Adams & Reeve, 1850: 76. = ? *Trigoniulia oruata* d'Orbigny, 1846  
*nybelini*, *Cuspidaria* Odhner, 1960: 381. = *Cuspidaria uadata* (Verrill, 1884)

- oahuensis*, *Policordia* "Dall, 1895" Higo & Goto, 1993: 679. = *Allogrammia oahuensis* (Dall, 1913)  
 [?Lyoniidae]
- obesa*, *Neaera* Lovén, 1846: 202. Arctic, North Atlantic. 73-4453 m. [*Cuspidaria*]
- obliqua*, *Cuspidaria* (*Cardiomya*) De Boer, 1985: 101. North Atlantic. 60-245 m. [*Cardiomya*]
- obliqueovata*, *Policordia* (*Latebranchia*) Ivanova, 1977: 189. West Pacific. 1100-1640 m. [*Policordia*]
- obtusirostris*, *Cuspidaria* Okutani, 1962: 34. Northwest Pacific. 620-1640 m. [*Cuspidaria*]
- occidua*, *Cuspidaria* Cotton, 1931: 347. Southern Australia. 132-148 m. [*Cuspidaria*]
- ochotensis*, *Cardiomya* Scarlato, 1972: 125. Northwest Pacific. 144-207 m. [*Cardiomya*]
- ochotensis*, *Poromya granuloderma* Scarlato, 1981: 429. = *Poromya granuloderma* Scarlato, 1981
- ochotica*, *Policordia* Scarlato, 1981: 419. West Pacific. 660 m. [*Policordia* (*Dallicordia*)]
- octaporosa*, *Cuspidaria* (*Myonera*) Allen & Morgan, 1981: 476. North Atlantic. 3459-5000 m.  
 [*Octoporia*]
- okezoko*, *Cuspidaria* Okutani, 1985: 146. Northwest Pacific. 400 m. [*Cuspidaria*]
- okutanii*, *Cardiomya behringensis* Scarlato, 1972: 122. = *Cardiomya behringensis* (Leche, 1883)
- olivacea*, *Policordia* Poutiers sp. nov. Tropical West Pacific. 980-1080 m. [*Policordia*]
- oldroydi*, *Cuspidaria* (*Cardiomya*) Dall in Oldroyd, 1924: 33. = *Cardiomya pectinata* (Carpenter, 1864)
- opalina*, *Neaera* Hinds, 1843: 78. = *Theora opalina* (Hinds, 1843) [Semelidae]
- optima*, *Cuspidaria* Sowerby, 1904: 17. Southwest Indian Ocean. 44-564 m. [*Cuspidaria*]
- optima*, *Verticordia* Sowerby, 1894a: 39. = *Euciroa eburnea* (Wood-Mason & Alcock, 1891)
- orbiculata*, *Verticordia* (*Laevicordia*) Seguenza, 1876a: 112. Mediterranean. Depth unknown. [*Laevicordia*]
- oregonensis*, *Poromya* Ridewood, 1903: 274. *Nom. dub.*
- orientalis*, *Cuspidaria* (*Cardiomya*) Thiele & Jaeckel, 1931: 257. Indian Ocean. 50 m. [*Cardiomya*]
- orientalis*, *Poromya* Thiele & Jaeckel, 1931: 251. West Indian Ocean. 693-1644 m. [*Poromya* (*Cetomya*)]
- ornata*, *Trigouulina* d'Orbigny, 1846: 292. West Atlantic, East Pacific. 18-850 m. [*Trigonulina*]
- ornatissima*, *Sphena* d'Orbigny in de la Sagra, 1846: 286. West Atlantic. 34-620 m. [*Cardiomya*]
- ovata*, *Policordia* (*Latebranchia*) Ivanova, 1977: 191. West Pacific. 5740-6040 m. [*Policordia*]
- pacifica*, *Euciroa* Dall, 1895b: 688. Mid-North Pacific. 435-910 m. [*Euciroa*]
- pacifica*, *Lyonsiella* Dall, 1908: 428. Mid Pacific. 2090 m. [*Laevicordia*]
- paleifera*, *Bathyneaera* Krylova, 1993: 57. Tropical West Atlantic. 6800-8330 m. [*Bathyneaera*]
- pailoloana*, *Cuspidaria* (*Myonera*) Dall, Bartsch & Rehder, 1938: 225. Mid-North Pacific. 506-604 m.  
 [*Myonera*]
- panainensis*, *Cuspidaria* Dall, 1908: 432. Tropical East Pacific. 915-1281 m. [*Cuspidaria*]
- papyracea*, *Lyonsiella* E. A. Smith, 1885: 73. Southeast Indian Ocean. 3562 m. [*Policordia*]
- papryria*, *Neaera* Jeffreys, 1876: 498. Northeast Atlantic. 2652 m. [? *Cuspidaria*]
- parapodema*, *Cuspidaria* Bernard, 1969: 2232. East Pacific. 53-320 m. [*Cuspidaria*]
- parkeri*, *Cuspidaria* Knudsen, 1970: 150. Tropical East Pacific. 2790-2817 m. [*Cuspidaria*]
- parthenopaea*, *Cunningia* Tiberi, 1855: 10. = *Poromya granulata* (Nyst & Westendorp, 1839)
- parva*, *Cuspidaria* Verrill & Bush, 1898: 801. North & Central Atlantic. 257-4659 m. [*Cuspidaria*]
- parva*, *Lyonsiella* Okutani, 1962: 29. Northwest Pacific. 1230-1350 m. [*Lyonsiella*]
- patagonica*, *Neaera* E. A. Smith, 1885: 39. Southeast Pacific. 302 m. [*Cuspidaria*]
- paucistriata*, *Myonera* Dall, 1886b: 302. Atlantic. 600-3806 m. [*Myonera*]
- paucistriata*, *Neaera* "Dall" Bush, 1885: 473, *nom. nud.* = *Cardiomya gemma* Verril & Bush, 1898
- pectinata*, *Neaera* Carpenter, 1864: 602, 637, *nom. nud.*; 1865: 54. East Pacific. 45-210 m. [*Cardiomya*]
- pellucida*, *Neaera* Stimpson, 1853: 21. Northwest Atlantic. 95-944 m. [*Cuspidaria*]
- pelseneeri*, *Cetoconcha* Pelseneer, 1911: 79. Habitat unknown. [*Cetoconcha*]
- pergrauosa*, *Poromya* Pelseneer, 1911: 78. = *Poromya australis* E. A. Smith, 1885
- pergrauosa*, *Poromya* (*Poromya*) Prashad, 1932: 326. = *Poromya australis* E. A. Smith, 1885
- periplomoides*, *Cuspidaria* Sakurai & Habe in Habe, 1961: 146 & App. 41. Northwest Pacific. 200 m.  
 [? *Pseudoneaera*]
- perla*, *Poromya* Dall, 1908: 428. Northeast Pacific. 2071-3518 m. [*Perlaporomya*]

- perplexa*, *Lyonsiella* Allen & Turner, 1974: 437. West Atlantic. 2041-4429 m. [*Lyonsiella*]  
*perpicata*, *Verticordia* Dall, 1890: 278. East Pacific. 1000-1500 m. [*Halicardia*]  
*perrostrata*, *Neaera ornatissima* var. Dall, 1881: 110. West Atlantic. 35-761 m. [*Cardiomya*]  
*persculpta*, *Cuspidaria (Cardiomya)* Prashad, 1932: 332. = *Cardiomya alcocki* (E. A. Smith, 1894)  
*perversa*, *Verticordia* Dall, 1886b: 289. Northwest Atlantic. 1337 m. [*Verticordia*]  
*philippinensis*, *Halicardia* Poutiers, 1981: 353. Tropical West Pacific. 592-610 m. [*Halicardia*]  
*philippinensis*, *Neaera (Rhinomya)* A. Adams, 1864: 207, *nont. nud.*; non *Neaera philippinensis* Hinds, 1843. = *Cuspidaria (Rhinoclania) adamsi* Heppell & Morgan, 1981  
*philippinensis*, *Neaera* Hinds, 1843: 78. West Pacific. 36-55 m. [*Cuspidaria (Luzonia)*]  
*pilula*, *Lyonsiella* Pelseneer, 1911: 76. West Pacific, Gulf of Alaska (IVANOVA, 1977). 100-2980 m. [*Policordia*]  
*pilula*, *Lyonsiella* Prashad, 1932: 325. = *Policordia pilula* (Pelseneer, 1911)  
*pinna*, *Cuspidaria (Cardiomya)* Verco, 1908: 200. Southern Australia. 220-549 m. [*Cardiomya*]  
*planetica*, *Cuspidaria (Cardiomya)* Dall, 1908: 433. East Pacific. 25-3000 m. [*Cardiomya*]  
*planulata*, *Lyonsiella* Thiele, 1912: 232. = *Lyonsia arcaeformis* Martens, 1885 [Lyonsiidae]. See DELL (1990: 63)  
*platensis*, *Neaera* E. A. Smith, 1885: 45. Southwest Atlantic. 100-1100 m. [*Cuspidaria*]  
*plicata*, *Cuspidaria* Thiele, 1912: 233. = *Cuspidaria tenella* E. A. Smith, 1907  
*podobeda*, *Octoporia* Krylova, 1994b: 42. Southeast Pacific. 2140 m. [*Octoporia*]  
*polpodes*, *Cuseidaria (sic)* Dautzenberg & Fischer, 1897a: 28, *nom. null.* Error for *Cuspidaria colpodes* Dautzenberg & Fischer, 1897  
*potti*, *Cuspidaria (Cardiomya)* Sturany, 1901: 264. = *Cardiomya alcocki* (E. A. Smith, 1894)  
*pretiosa*, *Myonera* (?) Verrill & Bush, 1898: 812. Northwest Atlantic. 618 m. [*? Myonera*]  
*prolatissima*, *Cuspidaria* Poutiers, 1981: 348. Tropical West Pacific. 170-407 m. [*Cuspidaria*]  
*pseustes*, *Cuspidaria (Cardiomya)* Dall, 1908: 432. = *Cardiomya planetica* (Dall, 1908), *fide* E. COAN (*in litt.* 1992)  
*pulchella*, *Neaera (Cardiomya)* H. Adams, 1871: 789. = *Cardiomya singaporesis* (Hinds, 1843)  
*pulchella*, *Poromya* Adams & Reeve, 1850: 83. = *Raeta (Raetellops) pulchella* (Adams & Reeve, 1850) [Mactridae]  
*pygmaea*, *Verticordia (Haliris)* Kuroda, 1952: 10. Northwest Pacific. 30-200 m. [*Haliris (Setaliris)*]  
*quadrata*, *Lyonsiella* Hedley, 1907a: 303. Southwest Pacific. 146 m. [*Lyonsiella*]  
*quadrata*, *Verticordia* Dall, 1886b: 290. Atlantic. 630-4980 m. [*Verticordia*]  
*quadrostrata*, *Myonera angularis* Poutiers, 1984: 292. West Indian Ocean. 3700-3716 m. [*Bathyneaera*]  
*quaylei*, *Lyonsiella* Bernard, 1969: 2232. East Pacific. 350-1800 m. [*Lyonsiella*]  
*radiata*, *Anatina Calcarata*, 1840: 40. = *Cardiomya costellata* (Deshayes, 1833)  
*radiata*, *Lyonsiella* Dall, 1889: 442, *nom. nud.*; 1890: 276. Southeast Pacific. 675-821 m. [*Policordia*]  
*raoulensis*, *Austroneaera* Powell, 1958: 78. Southwest Pacific. 75-85 m. [*Cuspidaria (Rhinoclania)*]  
*rara*, *Cuspidaria* Thiele & Jaeckel, 1931: 253. = *Cuspidaria optima* Sowerby, 1904  
*rectangularata*, *Policordia (Angustebranchia)* Ivanova, 1977: 180. West Pacific. 8175-9380 m. [*Policordia (Angustebranchia)*]  
*rectimarginata*, *Cardiomya* Dell, 1962: 69. South Pacific. 550 m. [*Cardiomya*]  
*renovata*, *Neaera* Tiberi, 1855: 9. = *Cuspidaria rostrata* (Spengler, 1793)  
*reticulata*, *Cuspidaria (Cardiomya)* Kuroda, 1948: 19. Northwest Pacific. 100-800 m. [*Cardiomya*]  
*rhomboidea*, *Verticordia* Hedley, 1906b: 72, *non* Tate, 1887. = *Haliris (Setaliris) setosa* (Hedley, 1907)  
*robiginosa*, *Cardiomya* Okutani & Sakurai, 1964: 23. = *Cardiomya belringensis* (Leche, 1883)  
*romantheusis*, *Poromya* Odhner, 1960: 374. = *Poromya tornata* (Jeffreys, 1876)  
*ros*, *Cuspidaria (Halonympha)* Verco, 1908: 201. Southern Australia. 235-550 m. [*Halonympha*]  
*rosea*, *Neaera* Hinds, 1843: 78. West Pacific. 9-55 m. [*Cuspidaria*]  
*rostra*, *Myonera* Poutiers & Bernard *sp. nov.* West Central Pacific. 280-440 m. [*Myonera*]  
*rostrata*, *Euciroa (Acreuciroa)* Thiele & Jaeckel, 1931: 249. West Pacific and East Indian Ocean. 200-550 m. [*Acreuciroa*]  
*rostrata*, *Mya* Spengler, 1793: 42. Arctic, North and Central Atlantic. 18-2997 m. [*Cuspidaria*]

- rostrata*, *Poromya* Rehder, 1943: 189. Northwest & West Central Atlantic. 110-183 m. [*Poromya*]  
*rostratocostellata*, *Corbula* Acton, 1855: 3. = *Cardiomya costellata* (Deshayes, 1833)  
*rotundata*, *Poromya* Jeffreys, 1876: 494. = *Poromya granulata* (Nyst & Westendorp, 1839)  
*rugata*, *Neaera* (*Rhinomya*) Angas, 1867: 914, non A. Adams, 1864. = *Plectodon brazieri* (E.A. Smith, 1885)  
*rugata*, *Neaera* (*Rhinomya*) A. Adams, 1864: 207. Northwest Pacific. 46 m. [*Cuspidaria* (*Rhinoclama*)]  
*ruginosa*, *Neaera* Jeffreys, 1882: 942. East Atlantic. 250-3400 m. [*Protocuspidaria* (*Edentaria*)]  
*rugosa*, *Octoporia* Krylova, 1994b: 44. Southern Australia. 5020 m. [*Octoporia*]  
*saha*, *Cardiomya* Knudsen, 1982: 133. West Central Atlantic. 235 m. [*Cardiomya*]  
*sadoensis*, *Cuspidaria* Okutani & Ito, 1983: 167. Northwest Pacific. 200-275 m. [*Cuspidaria*]  
*sagamiana*, *Cardiomya* Okutani & Sakurai, 1964: 21. = *Cardiomya tosaensis* (Kuroda, 1948)  
*sagamiensis*, *Dermatomya tenuiconcha* Okutani, 1962: 32. = *Poronya* (*Dermatomya*) *tenuiconcha* Dall, 1913  
*saharica*, *Mytilimeria* Locard, 1898: 213. East Central Atlantic. 1495 m. [*Halicardia*]  
*salauensis*, *Cuspidaria* Thiele & Jaeckel, 1931: 254. West Indian Ocean. 404 m. [*Hulonynipha*]  
*sansibarica*, *Poronya* Thiele & Jaeckel, 1931: 251. West Indian Ocean. 404-463 m. [*Poromya*]  
*sarsi*, *Silemia* E. A. Smith, 1885: 75. Southwest Atlantic, Southeast Indian Ocean. 3566-4846 m. [*Cetococoncha*]  
*seacher*, *Plectodon* Carpenter, 1866: 207. East Pacific. 20-250 m. [*Plectodon*]  
*scapha*, *Cetococoncha* Dall, 1902: 561. Tropical East Pacific. 183 m. [*Poromya* (*Cetomya*)]  
*sequenzae*, *Verticordia* Dall, 1886b: 290. West Atlantic. 227-1170 m. [*Verticordia*]  
*semicostata*, *Cuspidaria* (*Cardiomya*) Prashad, 1932: 333. Tropical West Pacific. 411 m. [*Cardiomya* (*Kurodaiya*)]  
*semipellucida*, *Cuspidaria* (?*Plectodon*) Kuroda, 1948: 24. Northwest Pacific. 100-250 m. [*Pseudoneacea*]  
*seuirostrata*, *Cuspidaria* Locard, 1898: 177. Atlantic. 2030-3175 m. [*Cuspidaria*]  
*semistrigosa*, *Neaera* Jeffreys, 1882: 941. Northeast and tropical Atlantic. 330-1220 m. [*Cuspidaria* (*Rhinoclama*)]  
*septentrionalis*, *Cuspidaria* (*Cardiomya*) *gouldiana* Kuroda, 1948: 18. = *Cardiomya gouldiana* (Hinds, 1843)  
*setosa*, *Verticordia* Hedley, 1907a: 303, nom. nov. pro *Verticordia rhomboidea* Hedley, 1906, non Tate, 1887. Southwest Pacific. 146-293 m. [*Haliris* (*Setaliris*)]  
*sibogai*, *Cuspidaria* (*Cardiomya*) Prashad, 1932: 331. Indonesia. 2060 m. [*Cardiomya*]  
*simillima*, *Cuspidaria* (*Cardiomya*) E. A. Smith, 1915: 104. = *Cardiomya cleryana* (d'Orbigny, 1845)  
*sinilis*, *Rhinoclania* (*Austroneaera*) Krylova, 1994a: 61. Southeast Pacific. 380-570 m. [*Cuspidaria* (*Rhinoclama*)]  
*simplex*, *Cuspidaria* (*Luzonia*) Allen & Morgan, 1981: 485. East Central Atlantic. 619-2357 m. [*Cuspidaria* (*Luzonia*)]  
*simplis*, *Protocuspidaria* (*Edentaria*) Allen & Morgan, 1981: 498. North Atlantic. 1624-4825 m. [*Protocuspidaria* (*Edentaria*)]  
*siuulans*, *Cuspidaria* Tate, 1897: 44. Southern Australia. 75-275 m. [*Cuspidaria* (*Rhinoclama*)]  
*singaporenensis*, *Neaera* Hinds, 1843: 77. Indo-Pacific. 10-200 m. [*Cardiomya*]  
*sinica*, *Cardiomya* Xu, 1980: 338. Northwest Pacific. 104-220 m. [*Cardiomya*]  
*siuosa*, *Octoporia* Krylova, 1994b: 40. Northwest, Southern Australia. 4440-5540 m. [*Octoporia*]  
*sinuosa*, *Pecchiolia* Jeffreys, 1882: 932. North Atlantic, Mediterranean. 1200-2500 m. [*Laevicordia*]  
*smiti*, *Lyonsiella* Friele, 1886: 38, nom. nov. pro *Lyonsiella jeffreysi* E. A. Smith, 1885, non Friele, 1879. Atlantic. 3300-4400 m. [*Laevicordia*]  
*smithi*, *Lyonsiella* Dautzenberg, 1927: 348, noni. nov. pro *Lyonsiella jeffreysi* E. A. Smith, 1885, non Friele, 1879. = *Laevicordia smiti* (Friele, 1886)  
*smithi*, *Lyonsiella* Prashad, 1932: 325, non Dautzenberg, 1927. = *Laevicordia abscissa* (Pelseneer, 1911)  
*suithii*, *Cetococoncha* Dall, 1908: 431. East Central & Southeast Pacific. 302-3436 m. [*Cetococoncha*]

- smithii*, *Vulcanomya* Dall, 1886b: 299, *nom. nov. pro Neaera adunca* E.A. Smith, 1885 non Gould, 1861. Habitat unknown. [*Cuspidaria (Vulcanomya)*]
- solidula*, *Cuspidaria (Cuspidaria)* Prashad, 1932: 330. Tropical West Pacific. 522 m. [*Cuspidaria*]
- soyoae*, *Poromya (Dermatoinya)* Habe, 1952a: 274, *nom. nud.* = *Dermatoinya tenuiconcha* var. *soyoae* Habe, 1952b
- soyoae*, *Dermatomya tenuiconcha* var. Habe, 1952b: 158. = *Poromya (Dermatomya) tenuiconcha* Dall, 1913
- spinosa*, *Euciroa* Thiele & Jaeckel, 1931: 249. West Indian Ocean. 404-463 m. [*Euciroa*]
- spinosa*, *Verticordia (Haliris)* Bernard, 1969: 2233. Tropical East Pacific. 275 m. [*Haliris*]
- spinulosa*, *Poromya* Thiele, 1912: 232. Antarctic. 300-400 m. [*Poronya*]
- steindachneri*, *Cuspidaria* Sturany, 1901: 261. Indo-Pacific. 106-1308 m. [*Cuspidaria*]
- striata*, *Neaera* Jeffreys, 1876: 495. Atlantic. 150-2650 m. [*Cardiomya*]
- striata*, *Poromya* Sowerby, 1904: 16. South Africa. 97-384 m. [*Poromya*]
- striatella*, *Halouynpha* Verrill & Bush, 1898: 810. West Atlantic. 618-760 m. [*Halonympha*]
- striolata*, *Cuspidaria* Locard, 1898: 195. Northeast Atlantic, Mediterranean. 322-2100 m. [*Cardiomya*]
- subglacialis*, *Cuspidaria* Dall, 1913: 593. Northeast Pacific. 2000 m. [*Cuspidaria*]
- sublevis*, *Poromya* Verrill, 1884: 221. = *Poromya tornata* (Jeffreys, 1876)
- subrotuudata*, *Policordia (Latebranchia)* Ivanova, 1977: 192. North Pacific. 1050 m. [*Policordia*]
- subquadrata*, *Pecchiolia* Jeffreys, 1882: 932. North Atlantic. 298-3340 m. [*Lyonsiellu*]
- suhrtorta*, *Neaera* G. O. Sars, 1878: 87. Arctic, North Atlantic. 0-990 m. [*Cuspidaria*]
- suganumai*, *Cuspidaria* Nomura, 1940: 101. Northwest Pacific. 106-220 m. [*Cuspidaria*]
- sulcata*, *Corbula* Wood, 1840: 243, *nom. nud.* = *Cuspidaria jugosa* (Wood, 1850)
- sulcata*, *Neaera* Lovén, 1846: 202. = *Cardiomya costellata* (Deshayes, 1833)
- sulcifera*, *Neaera* Jeffreys, 1880: 316, *nom. nud.*; 1882: 937. Northeast Atlantic. 80-1250 m. [*Cuspidaria*]
- sumatrana*, *Poromya* Thiele & Jaeckel, 1931: 252. East Indian Ocean. Depth unknown. [*Poromya*]
- surinamensis*, *Cardiomya* Altena, 1971: 78. West Central Atlantic. 6-95 m. [*Cardiomya*]
- tanabensis*, *Plectodon (Pseudoneaera)* Habe, 1960: 288. = *Cuspidaria (Leiomya) adunca* (Gould, 1861)
- tasmanica*, *Cuspidaria* Knudsen, 1970: 152. Southwest Pacific. 4400 m. [*Myonera*]
- tasmunica*, *Neaera* Tenison-Woods, 1876: 27. Southern Australia. (*fide* TATE, 1897: 44). [*?Pseudoneaera*]
- tenella*, *Cuspidaria* E. A. Smith, 1907: 1. Antarctic. 183-1674 m. [*Cuspidaria*]
- tenerrima*, *Verticordia* Thiele & Jaeckel, 1931: 246. West Indian Ocean. 463 m. [*Verticordia*]
- tenuiconcha*, *Poromya (Dermatomya)* Dall, 1913: 596. Northeast & Northwest Pacific. 100-2200 m. [*Poronya (Dermatomya)*]
- tenuis*, *Neaera* Hinds, 1844: 97. = *Raeta (Raetella) tenuis* (Hinds, 1844) [Mactridae]
- tenuissima*, *Cetocoencha* Okutani, 1966: 9. Northwest Pacific, 500-1000 m. [*Cetoconcha*]
- teporis*, *Haliris* Poutiers & Bernard, *sp. nov.* West Pacific. 390 m. [*Haliris*]
- teramachii*, *Cuspidaria* Kuroda, 1948: 14. Northwest Pacific. 100 m. [*Cuspidaria*]
- teramachii*, *Euciroa (Acreuciroa)* Kuroda, 1952: 15. = *Acreuciroa rostrata* (Thiele & Jaeckel, 1931)
- teres*, *Neaera* Jeffreys, 1882: 939. North Atlantic. 252-3000 m. [*Cuspidaria (Rhinoclama)*]
- testai*, *Cuspidaria* Knudsen, 1970: 154. Northwest Atlantic. 4380 m. [*Cuspidaria (Rhinoclama)*]
- thaumasia*, *Pseudoneaera* Sturany, 1901: 11. Red Sea, Indian Ocean. 247-1082 m. [*Pseudoneaera*]
- thoniassini*, *Protocuspida (Edentaria)* Poutiers, 1984: 295. West Indian Ocean. 3716 m. [*Protocuspida (Edentaria)*]
- tillainookensis*, *Myonera* Dall, 1916a: 23, *nom. nud.*; 1916 b: 407. East and Southwest Pacific, tropical East Atlantic. 436-2850 m. [*Bathyneaera*]
- toiulini*, *Cuspidaria (Cuspidaria)* Prashad, 1932: 330. West Central Pacific. 275 m. [*Cuspidaria*]
- toruata*, *Pecchiolia* Jeffreys, 1876: 494. North and Central Atlantic. West & Central Indian Ocean. 2085-5300 m. [*Poronya*]
- torridu*, *Verticordia* Hedley, 1906a: 473. Southwest Pacific. 31-37 m. [*Vertambitus*]

- tossaensis*, *Cuspidaria (Cardiomya)* Kuroda, 1948: 18. Northwest Pacific. 28-300 m. [*Cardiomya*]  
*trailii*, *Neaera* Hutton, 1873: 62. Southwest Pacific. 9-202 m. [*Cuspidaria*]  
*transversa*, *Poromya* Dall, Bartsch & Rehder, 1938: 224. Mid-North Pacific. 474-487 m. [*Poromya*]  
*transversa*, *Verticordia* Locard, 1898: 201. Northeast Atlantic, West Indian Ocean. 3700-4165 m. [*Cetoconcha*]  
*trapeza*, *Euciroea* Poutiers, 1982: 331. West Pacific. 250-550 m. [*Euciroea*]  
*trapezoidea*, *Verticordia* Seguenza, 1876a: 110. = *Haliris granulata* (Seguenza, 1858)  
*triangularis*, *Verticordia* Locard, 1898: 207. Atlantic. 200-3862 m. [*Vertambitus*]  
*trigona*, *Neaera* Hinds, 1843: 78. Habitat unknown. [*Cuspidaria*]  
*trigonalis*, *Cuspidaria* Tate, 1897: 45. Southern Australia. 27-64 m. [? *Pseudoneaera*]  
*trigonata*, *Thyasira* Yokoyama, 1922: 158. Northwest Pacific. 50-150 m. [*Siuiplicicordia*]  
*trosaetes*, *Cuspidaria* Dall, 1925: 16. Northwest Pacific. 50-650 m. [*Cuspidaria (Nordoneaera)*]  
*trosti*, *Poromya* Strong & Hertlein, 1937: 163. Northeast Pacific. 37-398 m. [*Poromya (Dermatonya)*]  
*truncata*, *Cuspidaria* Hedley, 1905: 47. Southwest Pacific. 203 m. [*Cuspidaria*]  
*truncata*, *Neaera* Jeffreys, 1880: 316, *nom. nud.*; 1882: 936. North Atlantic. 710-1340 m. [*Pseudoneacea*]  
*tuberata*, *Poromya* Jeffreys, 1882: 936. = *Poromya neaeroides* Seguenza, 1876  
*tuhua*, *Cuspidaria* Dell, 1962: 67. South Pacific. 494 m. [*Cuspidaria*]  
*turgida*, *Cuspidaria* Verrill & Bush, 1898: 799. Northwest Atlantic. 3338 m. [*Cuspidaria*]  
*typus*, *Cuspidaria* Nardo, 1840: 50. = *Cuspidaria cuspidata* (Oliv, 1792)  
*unibonata*, *Poromya* Knudsen, 1982: 129. West Central Atlantic. 850 m. [*Poromya*]  
*andata*, *Neaera* Verrill, 1884: 223. Atlantic, Indian Ocean. 4320-5300 m. [*Cuspidaria*]  
*undosa*, *Poromya* Hedley & Petterd, 1906: 224. Southwest Pacific. 457-549 m. [*Poromya*]  
*aschakovi*, *Lyonsiella* Gorbunov, 1946: 321. Arctic. 1475-2209 m. [*Policordia (Dalicordia)*]  
*vadosa*, *Verticordia* Hedley, 1907a: 303. Southwest Pacific. 146 m. [*Vertambitus*]  
*valdiviae*, *Cuspidaria* Thiele & Jaeckel, 1931: 225. Indian Ocean. 693-1644 m. [*Cuspidaria (Rhinoclina)*]  
*variola*, *Cuspidaria* Bernard, 1979: 16. Northeast Pacific. 2520-2884 m. [*Cuspidaria*]  
*velvetina*, *Leiomya (Plectodon) granulata* var. Dall, 1886b: 300. = *Plectodon granulatus* (Dall, 1881)  
*ventricosa*, *Cuspidaria* Verrill & Bush, 1898: 802. Atlantic. 349-3235 m. [*Cuspidaria*]  
*verityi*, *Protocuspidaria (Protocuspidaria)* Allen & Morgan, 1981: 496. Atlantic. 943-4706 m.  
[*Protocuspidaria*]  
*verticordia*, *Verticordia* Nordsieck, 1969: 170, *non* S.Wood, 1840 (*nom. nud.*) = *Verticordia cardiformis* (Sowerby, 1844), a fossil species of Europe. = *Spinosipella acuticostata* (Philippi, 1844)  
*vitrea*, *Neaera* Lovén, 1846: 202. = *Cuspidaria abbreviata* (Forbes, 1843)  
*walleri*, *Cuspidaria (Luzonia)* Bernard, 1989: 64. Northeast Pacific. 100-450 m. [*Caspidaria (Luzonia)*]  
*wellhuani*, *Austroueaera* Fleming, 1948: 82. Southwest Pacific. 7-55 m. [*Pseudoneaera*]  
*willetti*, *Cuspidaria* Fleming, 1948: 81. South Pacific. 26-64 m. [*Cuspidaria*]  
*wollastonii*, *Neaera* E. A. Smith, 1885: 40. Atlantic. 103-3175 m. [*Cuspidaria*]  
*woodi*, *Verticordia* E. A. Smith, 1885: 168. West Atlantic. 180-1850 m. [*Verticordia*]

Note 1: Though *Myouera* is considered here as a full genus, distinct from *Cuspidaria*, the name *Cuspidaria (Myonera) atlantica* Allen & Morgan, 1981, is a primary homonym of *Cuspidaria (Cuspidaria) atlantica* Allen & Morgan, 1981, and consequently invalid, according to Article 57d of the Code dealing with irrelevance of subgeneric names on homonymy between species-group names. Then, the species has to be renamed, and I am pleased to give it herein the new name of *Myonera alleui*, in honour of my talented friend, Dr John A. ALLEN of the University Marine Biological Station, Millport.

Note 2: I have examined the type of *Mytilinaria compressa* Locard in MNHN. It consists of a single left valve showing lucinoid but not verticordioid affinities: the shell is lenticular, without an external granulation; the interior is not nacreous, the pallial line without a sinus, and the anterior adductor muscle scar elongate, with a ventral expansion parallel to the pallial line.

Note 3: The systematic placement of *Lyonsia formosa* Jeffreys has been much disputed, and is still controversial. First considered a member of family Lyonsiidae, this species has been made a *Lyonsiella* by ALLEN & TURNER (1974) on anatomical grounds. Later, on the basis of ALLEN & TURNER's study, SCARLATO & STAROBOGATOV (1983) created for it the monogenic family Spinolyonsiellidae and new genus *Spinolyonsiella*. However, as DALL (1903) already made *L. formosa* the type species of *Allogramma*, *Spinolyonsiella* cannot stand and is an objective junior synonym of *Allogramma*.

I refrain from adopting these nomenclatural changes, as it appears that the identity of *L. formosa* (*sensu* Allen & Turner) is problematical. Actually, it is possible that two species (perhaps not closely related) have been mixed, one mainly bathyal, the other abyssal (POUTIERS, 1984). Then, the form DALL had in view when erecting *Allogramma* might be different from that studied by ALLEN & TURNER.

## APPENDIX 1

### STATION DATA

#### MUSORSTOM 1 (Philippines)

- Stn 5, 19.III.76, North of Lubang Island, 14°01.5' N, 120°22' E, 200-215 m; gear: 4 m beam trawl: *Cuspidaria couvexa*.
- Stn 25, 22.III.76, North of Lubang Island, 14°02.5' N, 120°22' E, 191-200 m, sand and mud; gear: 4 m beam trawl: *Cuspidaria prolatissima*.
- Stn 26, 22.III.76, North of Lubang Island, 14°00' N, 120°17' E, 189 m; gear: 4 m beam trawl: *Poromya butoni*.
- Stn 31, 22.III.76, North of Lubang Island, 14°00' N, 120°17.5' E, 187-195 m, mud; gear: 4 m beam trawl: *Cuspidaria prolatissima*, *Poromya butoni*.
- Stn 34, 23.III.76, North of Lubang Island, 13°59.5' N, 120° 17.5' E, 188-191 m; gear: 5 m beam trawl: *Poromya butoni*.
- Stn 42, 24.III.76, channel between Lubang and Luzon islands, 13°54.5' N, 120°29' E, 379-407 m, hard mud; gear: 5 m beam trawl: *Acreuciroa rostrata*, *Cuspidaria prolatissima*.
- Stn 43, 24.III.76, channel between Lubang and Luzon islands, 13°50' N, 120°28' E, 448-484 m, mud with plant remains and stones; gear: 5 m beam trawl: *Acreuciroa rostrata*.
- Stn 44, 24.III.76, South of channel between Lubang and Luzon islands, 13°46.5' N, 120°29.5' E, 592-610 m, mud with plant remains; gear: 5 m beam trawl: *Halicardia philippinensis*, *Euciroa eburnea*.
- Stn 47, 25.III.76, Southeast of Lubang Island, 13°41.5' N, 120°30' E, 685-757 m, mud with plant remains; gear: 5m beam trawl: *Euciroa eburnea*.
- Stn 49, 25.III.76, West of Lubang Island, 13°49' N, 120°00.5' E, 750-925 m, mud; gear: 4 m beam trawl: *Spinosipella costeinicensis*.
- Stn 50, 25.III.76, West of Lubang Island, 13°49' N, 120°02' E, 415-510 m, mud; gear: 4 m beam trawl: *Halonyxiphia leionyoides*, *Poromya eximia*.
- Stn 58, 26.III.76, North of Lubang Island, 13°58.5' N, 120°14' E, 143-178 m, sand and mud; gear: 4 m beam trawl: *Cardiomya gouldiana*.

- Stn 61, 27.III.76, North of Lubang Island, 14°01' N, 120°17.5' E, 124-129 m, mud; gear: 4 m beam trawl: *Poromya butoni*.  
 Stn 63, 27.III.76, North of Lubang Island, 14°00.5' N, 120°16' E, 191-195 m, mud; gear: 4 m beam trawl: *Cuspidaria lubangensis*, *Cuspidaria steindachneri*.  
 Stn 71, 28.III.76, Northeast of Lubang Island, 14°09.5' N, 120°26.5' E, 174-204 m, sand and mud; gear: 4 m beam trawl: *Cuspidaria gigantea*, *Cuspidaria hindsiiata*.  
 Stn 72, 28.III.76, Southwest of Corregidor Island, 14°12.5' N, 120°29' E, 122-127 m, hard mud; gear: 4 m beam trawl: *Poromya butoni*.  
 Stn 73, 28.III.76, Southwest of Corregidor Island, 14°16' N, 120°31.5' E, 70-76 m, sand and mud; gear: 4 m beam trawl: *Poromya butoni*.

#### MUSORSTOM 2 (Philippines)

- Stn 2, 20.XI.80, North of Lubang Island, 14°00.5' N, 120°17.3' E, 184-186 m; gear: 4 m beam trawl: *Euciroa crassa*.  
 Stn 6, 20.XI.80, North of Lubang Island, 13°56.5' N, 120°21.5' E, 136-152 m; gear: 4 m beam trawl: *Euciroa crassa*.  
 Stn 10, 21.XI.80, North of Lubang Island, 14°00.7' N, 120°18.2' E, 188-195 m; gear: 4 m beam trawl: *Cuspidaria gigantea*, *Euciroa crassa*.  
 Stn 11, 21.XI.80, North of Lubang Island, 14°00.3' N, 120°19.3' E, 194-196 m; gear: 4 m beam trawl: *Cuspidaria japonica*.  
 Stn 15, 21.XI.80, channel between Lubang and Luzon islands, 13°55' N, 120°28.9' E, 326-330 m; gear: 4 m beam trawl: *Acreuciroa rostrata*.  
 Stn 17, 22.XI.80, North of Lubang Island, 14°00.5' N, 120°17.8' E, 174-193 m; gear: 4 m beam trawl: *Euciroa crassa*, *Cuspidaria prolatissima*.  
 Stn 19, 22.XI.80, North of Lubang Island, 14°00.6' N, 120°17.4' E, 189-192 m; gear: 4 m beam trawl: *Euciroa millegemina*, *Cuspidaria nobilis*, *Poromya butoni*.  
 Stn 21, 22.XI.80, North of Lubang Island, 14°01.2' N, 120°17.6' E, 191-192 m; gear: 4 m beam trawl: *Cuspidaria nobilis*, *Cuspidaria prolatissima*.  
 Stn 25, 23.XI.80, Verde Island Passage, 13°39.5' N, 120°42.9' E, 520-550 m; gear: 4 m beam trawl: *Cuspidaria kyushuensis*, *Cardiomya alcocki*, *Poromya eximia*.  
 Stn 26, 23.XI.80, Verde Island Passage, 13°49' N, 120°50.3' E, 299-320 m; gear: 4 m beam trawl: *Euciroa crassa*, *Cuspidaria corrugata*, *Cuspidaria gigantea*, *Cuspidaria prolatissima*, *Poromya butoni*.  
 Stn 32, 24.XI.80, Verde Island Passage, 13°40.5' N, 120°54' E, 192-220 m; gear: geological dredge: *Euciroa millegemina*.  
 Stn 33, 24.XI.80, Verde Island Passage, 13°32' N, 121°07.5' E, 130-137 m; gear: 1.20 × 0.50 m rectangular dredge: *Spinosipella deshayesiana*, *Haliris multicostata*.  
 Stn 39, 25.XI.80, South of Mompog Passage, 13°08' N, 122°36.3' E, 1030-1190 m; gear: 4m beam trawl: *Cuspidaria macrorhynchus*, *Poromya eximia*.  
 Stn 40, 25.XI.80, South of Mompog Passage, 13°08' N, 122°40.2' E, 280-440 m; gear: 4 m beam trawl: *Myonera rostra*.  
 Stn 44, 26.XI.80, Mompog Passage, 13°23.5' N, 122°20.6' E, 760-820 m; gear: 4 m beam trawl: *Cuspidaria macrorhynchus*, *Poromya eximia*.  
 Stn 46, 26.XI.80, Mompog Passage, 13°26.2' N, 122°17.3' E, 445-520 m; gear: 4 m beam trawl: *Poromya eximia*.  
 Stn 49, 26.XI.80, Northwest of Marinduque Island, 13°38.8' N, 121°43.2' E, 416-425 m; gear: 4 m beam trawl: *Cuspidaria convexa*.  
 Stn 50, 27.XI.80, East of Golo Island, 13°37.4' N, 120°33' E, 810-820 m; gear: 4 m beam trawl: *Euciroa eburnea*.

- Stn 51, 27.XI.80, North of Lubang Island, 13°59.8' N, 120°17' E, 170-187 m; gear: 4 m beam trawl: *Spinosipella deshayesiana*, *Euciroa crassa*, *Cuspidaria gigantea*, *Cuspidaria nobilis*, *Cuspidaria prolatisima*.
- Stn 55, 27.XI.80, West of Cabra Island, 13°53.4' N, 119°57.8' E, 865-866 m; gear: 4 m beam trawl: *Spinosipella costenitens*.
- Stn 56, 28.XI.80, West of Cabra Island, 13°54.1' N, 119°56.7' E, 970 m; gear: 4 m beam trawl: *Cetoconcha exigua*.
- Stn 59, 28.XI.80, North of Lubang Island, 14°00.4' N, 120°17' E, 186-190 m; gear: 4 m beam trawl: *Cuspidaria nobilis*, *Poromya butoni*.
- Stn 63, 29.XI.80, North of Lubang Island, 14°07.3' N, 120°15.5' E, 215-230 m; gear: 4 m beam trawl: *Cuspidaria prolatisima*.
- Stn 64, 29.XI.80, North of Lubang Island, 14°00.8' N, 120°18.6' E, 191-195 m; gear: 4 m beam trawl: *Euciroa crassa*, *Cuspidaria prolatisima*.
- Stn 68, 29.XI.80, North of Lubang Island, 14°01.2' N, 120°18.2' E, 195-199 m; gear: 4 m beam trawl: *Euciroa crassa*, *Cuspidaria japonica*, *Cuspidaria nobilis*, *Cuspidaria prolatisima*.
- Stn 71, 30.XI.80, North of Lubang Island, 14°00.6' N, 120°18.5' E, 189-197 m; gear: 4 m beam trawl: *Euciroa crassa*, *Cuspidaria nobilis*.
- Stn 72, 30.XI.80, North of Lubang Island, 14°00.4' N, 120°18.6' E, 182-197 m; gear: 4 m beam trawl: *Euciroa crassa*, *Cuspidaria corrugata*, *Poromya butoni*.
- Stn 75, 01.XII.80, channel between Lubang and Luzon islands, 13°51.9' N, 120°30.1' E, 300-330 m; gear: 4 m beam trawl: *Acreuciroa rostrata*, *Cetoconcha boucheti*, *Poromya eximia*.
- Stn 78, 01.XII.80, channel between Lubang and Luzon islands, 13°49.5' N, 120°28.5' E, 441-550 m; gear: 4 m beam trawl: *Acreuciroa rostrata*, *Poromya eximia*.
- Stn 79, 01.XII.80, channel between Lubang and Luzon islands, 13°44' N, 120°31.7' E, 682-770 m; gear: 4 m beam trawl; material: *Euciroa eburnea*.
- Stn 80, 01.XII.80, South of Cape Santiago, Luzon Island, 13°45.2' N, 120°37.5' E, 178-205 m; gear: 4 m beam trawl: *Cuspidaria corrugata*, *Cuspidaria nobilis*, *Cuspidaria prolatisima*.
- Stn 81, 01.XII.80, Verde Island Passage, 13°35.3' N, 121°01.3' E, 856-884 m; gear: 4 m beam trawl: *Myonera dautzenbergi*.
- Stn 82, 02.XII.80, channel between Lubang and Luzon islands, 13°47' N, 120°28.8' E, 550 m; gear: 4 m beam trawl: *Euciroa eburnea*, *Acreuciroa rostrata*, *Poromya eximia*.
- Stn 83, 02.XII.80, channel between Lubang and Luzon islands, 13°55.9' N, 120°30.5' E, 318-320 m; gear: 4 m beam trawl: *Acreuciroa rostrata*, *Cuspidaria prolatisima*.

#### CORINDON 2 (Makassar Strait, Indonesia)

- Stn 208, 31.X.80, East of Borneo, 0°14.6' S, 117°52' E, 150 m; gear: 4 m beam trawl: *Cetocoucha gloria*.
- Stn 231, 04.XI.80, Northwest of Sulawesi, 0°04.9' N, 119°47.8' E, 980-1080 m; gear: 4 m beam trawl: *Policordia olivacea*.
- Stn 267, 07.XI.80, West of Sulawesi, 1°56.6' S, 119°16.7' E, 134-186 m; gear: 4 m beam trawl: *Cuspidaria nobilis*.
- Stn 280, 08.XI.80, West of Sulawesi, 1°59' S, 119°09.9' E, 715-800 m; gear: 4 m beam trawl: *Myonera dautzenbergi*.
- Stn 281, 08.XI.80, West of Sulawesi, 1°59' S, 119°09.9' E, 715-800 m; gear: 4 m beam trawl: *Cardiomya alcocki*.

*"Albatross"* (Northeastern Borneo)

Stn 5582, 26.IX.09, Si Amil Island, off Darvel Bay, 4°19.9' N, 118°58.6' E, 1628 m, gray mud and fine sand; gear: 12-foot beam trawl: *Halicardia houbricki*.

*"Vauban"* 1978-1979 (Southern New Caledonia)

Stn 2, 23.V.78, 22°17' S, 167°14' E, 425-430 m: *Spinosipella deshayesiana*, *Haliris multicostata*.  
 Stn 3, 23.V.78, 22°17' S, 167°12' E, 390 m: *Haliris teporis*.  
 Stn 4, 23.V.78, 22°17' S, 167°13' E, 400 m: *Spinosipella deshayesiana*.  
 Stn 9, 24.V.78, 22°20' S, 167°10' E, 175-200 m: *Cetoconcha japonica*.  
 Stn 14, 28.V.78, 22°16' S, 167°17' E, 465-495 m: *Euciroa trapeza*.  
 Stn 15, 10.IV.78, 22°49' S, 167°12' E, 390-395 m: *Spinosipella deshayesiana*, *Euciroa eburnea*.  
 Stn 16, 19.IV.78, 22°46' S, 167°12' E, 390-400 m: *Spinosipella deshayesiana*.  
 Stn 33, 06.VI.79, 22°33' S, 166°25' E, 290-350 m: *Euciroa trapeza*.  
 Stn 34, 06.VI.79, 22°32' S, 166°26' E, 350-420 m: *Euciroa trapeza*.  
 Stn 39, 07.VI.79, 22°29' S, 166°23' E, 375-550 m: *Euciroa trapeza*.  
 Stn 40, 07.VI.79, 22°30' S, 166°24' E, 250-350 m: *Haliris multicostata*, *Euciroa trapeza*.  
 Stn 42, 26.IX.79, 22°08' S, 167°04' E, 230-260 m: *Spinosipella deshayesiana*, *Cuspidaria clathrata*, *Cuspidaria morrisae*, *Myonera caduca*.

## APPENDIX 2

## System of the bivalve molluscs of the superorder Septibranchia.

O. A. SCARLATO & Ya. I. STAROBOGATOV (1983)

[Translation by J.-M. Poutiers & J. P. Rocroi]

Septibranch bivalve molluscs are distinguished by an extreme uniformity of their conchological characters. Each of the 3 Recent orders of this superorder (SCARLATO & STAROBOGATOV, 1979) is characterized on the whole by 1-2 types of shells. Hinges generally differ the one from the other only in their degree of reduction (*i.e.* by a negative feature); moreover, even the most complete hinge is so reduced that it is difficult to conclude whether it results from an heterodont or a preheterodont hinge (the second proposal seems to us the most likely). Ligaments are also completely uniform — that is, either marginal and visible from the outside (in Fordilliidae and in Recent poromyoid forms), or with a developed resilium and provided with a lithodcsma (in verticordioid and cuspidarioid forms). Simultaneously, the accumulation of anatomical data (among the most recent ones: KNUDSEN 1970; ALLEN & TURNER, 1974; BERNARD, 1974; IVANOVA, 1977; ALLEN & MORGAN, 1981; MORTON, 1982) instances the rather important taxonomic diversity of the superorder's components. One is entitled to conclude that the arguments of conchological order generally used for the generic classification of bivalves are inapplicable to septibranchs, and that one is confronted with a basic problem, the elaboration of new criteria suitable for the superorder in question.

To classify families and high level taxa, we propose to use anatomical characters, and first of all the branchial apparatus-septum structure — the organ that best characterizes the representatives of the superorder. It appears especially appropriate since study of the septibranchs anatomy is by far much more complete than the one of other bivalve molluscs.

Nowadays, it is very well established (ALLEN & MORGAN, 1981) that septum developed mainly at the expense of the inner demibranchs and by reduction of the reflexion of their filaments. The

following can be added to that is exposed in the above mentioned work. The hypothesis of ALLEN & MORGAN, attributing the origin of posterodorsal septal muscles in muscular fibres of the outer demibranch's filaments, perfectly suit for the poromyoid forms, especially since it is easy to relate the posterior group of the septal openings of Cetoconchidae to the interfilamentary grooves of the outer demibranch. On the contrary, posterior septal musculature of the cuspidarioid forms seems to have another origin. Judging on their disposition, posterolateral muscles (but in primitive cuspidarioids, only them and those situated in posterior part of septum) derive from musculature of the intersiphonal wall. Then, to increase efficiency of the septum's function, posterodorsal muscles originate, probably completely at the expense of the gathering of posterior fibres of the lateral muscles; posterodorsal muscles are no more necessary, and this leads to their gradual reduction (ALLEN & MORGAN, 1981). The lateral septal muscles, initially diffuse, even after separation of the posterodorsal muscles, and adhering generally along a line, concentrate into 2 pairs of fibres. A series of basic differences can be noticed about the septal openings disposition (reticulate windows, groups of openings, variable number of the series of openings).

By means of basic features of the branchial apparatus, verticordioid forms can be grouped in two suborders, according to the degree of development of the outer demibranchs and to the stomach's structure (IVANOVA, 1977). A small group, representatives of which have a complete septum, can be even related to cuspidarioid forms, and placed in a particular suborder. In the group of cuspidarioid forms, differences in the septum structure allow to split these forms into several families which are grouped together in two superfamilies; a third superfamily comprises the Eocene cuspidarioids with a developed nacreous layer (for that, they are often placed among poromyoids, despite their shell shape). For similar reasons, poromyoid forms must also be grouped in 2 superfamilies and 4 families.

We are not concerned with systematics of genera, since it needs a thorough study. However, grouping of the main known genera in families compels us to establish series of genera, when representatives of a traditional conchological genus fall in different families. The extinct order of conocardioids has been already considered (STAROBOGATOV, 1977). It is more varied when shell structure is taken into account, and since a conchological classification is easy to do. About the septum structure of its representatives, one may notice that two types of distribution can be observed there for the lateral muscles, and that the same exists in cuspidarioids: along a line or in a few bundles.

In the above exposed system, to designate the geological age of each genus, we use the latin abbreviation of the epoch (with R for Recent). Besides, to avoid coincidence between denominations of orders and suborders and those of genera, we use standardized suffixes, which are not of common usage in malacology, but are accepted in the systematics of other groups of animals: -oidei for suborders, -iformes for orders, -iformii for superorders; and we recommend that, in future, their use becomes widespread in malacology, because they are more convenient.

Superorder Septibranchia Pelseneer, 1889 (= Conocardiiformii Neumayr, 1891).

Order Verticordiiformes Scarlato & Starobogatov, 1971.

Suborder Fordilloidei Pojeta, 1975.

Gills composed of two demibranchs; a dorsal projection in stomach.

Superfamily Fordilloidea. Fordillidae Pojeta, 1975: *Fordilla* Barrande, 1881 — Cm, *Neofordilla* Krashilova, 1977 — O.

Superfamily Pariliomyoidea. Pariliomyidae Morton, 1981: *Procardia* Meek, 1871 — J-Cr, *Bucardiomya* Rollier in Cossmann, 1912 — J-Pg, (?) *Triplicosta* Cooper, 1897 — Pg, *Pariliomya* Melvill & Standen, 1899 — R, *Panacca* Dall, 1905 — R, *Nipponapanacca* Habe, 1977 — R.

Superfamily Euciroidae. Euciroidae Dall, 1894: *Euciropa* Dall, 1881 — R, *Acreuciroa* Thiele & Jaeckel, 1931 — R, *Kurinaria* Marwick, 1942 — Pg; Lyonsiellidae Scarlato & Starobogatov, 1971: *Lyonsiella* G. Sars, 1872 — R, *Proagorina* Iredale, 1930 — R, *Rectilyonsiella* gen. nov. (type

species *Lyonsiella couppressa* Allen & Turner, 1974. Shell rectangular, elongate, compressed; sculpture of raised and distinct small radial lines; hinge without teeth) — R; *Policordiidae* Scarlato, 1980: *Halicardia* Dall, 1895 — R, *Halicardissa* Dall, 1913 — R, *Vertisphaera* Iredale, 1930 — R, *Policordia* Dall, Bartsch & Rehder, 1939 — R (in this genus we provisionally include genus *Latebranchia* Ivanova gen. nov.; for its diagnosis, see: IVANOVA, 1977: 189, type species *Policardia obliquaeovata* Ivanova, 1977 here designated by IVANOVA).

#### Suborder Verticordioidei Scarlato & Starobogatov, 1971.

Gills are only composed of the inner demibranchs and sometimes by remnants of posterior part of the outer demibranchs; no dorsal projection in stomach.

*Spinolyonsiellidae* fam. nov. Shell rectangular, as in lyonsiellids, with prosogyrous and sharply prominent umbones. Surface with small spines arranged in radial rows; radial sculpture absent or formed by a keeled flexure posteriorly and a few nearby ribs; hinge without teeth: *Spinolyonsiella* gen. nov. (type species *Lyonsia formosa* Jeffreys, 1881. Shell with slightly anterior umbones; dorsal margin feebly curved; radial ribs well marked) — R, *Allenicordia* gen. nov. (type species *Pecchiolia subquadrata* Jeffreys, 1881. Shell with strongly prosogyrous and decidedly anterior umbones; dorsal margin strongly curved, especially in front of umbones; radial ribs absent) — R; *Verticordiidae* Stoliczka, 1871: *Verticordia* Sowerby, 1844 (with subgenus *Spinosipella* Iredale, 1930) — Pg-R, *Verticordia* Iredale, 1930 — R, *Haliris* Dall, 1886 (with subgenus *Setaliris* Iredale, 1930) — R, *Pecchiolia* Savi & Meneghini in Murchison, 1850 — Pg-Ng, *Trigomulua* d'Orbigny, 1846 — R, *Simplicicordia* Kuroda & Habe, 1971 — R, *Laevicordia* Seguenza, 1876 — Ng-R, *Angustebanchia* Ivanova gen. nov. (for its diagnosis, see: IVANOVA, 1977: 177-180, type species *Policardia rectangulata* Ivanova, 1977, here designated by IVANOVA) — R.

#### Order Conocardiformes Neumayr, 1891.

##### Suborder Eopteroidei subordo nov.

Valves open under the action of a ligament and are closed by 1 or 2 adductors; septal muscles attached to valves by 3 pairs of bundles.

Superfamily Eopteroidea. Two adductors. *Eopteriidae* Miller, 1889: *Eopteria* Billings, 1865 — O; *Stolidotidae* Starobogatov, 1977: (?) *Myona* Kobayashi, 1935 — Cm, *Eoischyrina* Kobayashi, 1933 — O, *Maniuka* Barrande, 1881 — O-S, *Stolidotus* Hede, 1915 — S.

Superfamily Pseudotechnophoroidea. One adductor. *Pseudotechnophoridae* Starobogatov, 1977: *Pseudotechnophorus* Kobayashi, 1933 — O.

##### Suborder Conocardioidei Neumayr, 1891.

Valves heavy; in living animal, they remain closed and are only pulled apart as growth goes on; adductors reduced; septal muscles not gathering in bundles and attached along a line.

Superfamily Euchasmatoidea. *Wanwaniidae* fam. nov. Keel flexure feeble. *Wanwania* Kobayashi, 1933 — O, *Apoptopegma* Pojeta, G.-T., Sherg., 1977 — O, *Euchasmatidae* Starobogatov, 1977: *Euchasina* Billings, 1865 — O, *Euchasinella* Kobayashi, 1933 — O, *Pseudeuchasina* Kobayashi, 1933 — O, *Tenka* Barrande, 1881 — O-S, *Tetinka* Barrande, 1881 — S-D, *Conocardiopsis* Beushausen, 1895 — D.

Superfamily Conocardioidea. *Bransoniidae* Pojeta & Runnegar, 1976: *Bransonia* Pojeta & Runnegar, 1976 — O-P, *Mulseodeus* Pojeta & Runnegar, 1976 — S-D, *Pseudocouocardium* Zavodowsky, 1960 — C-T; *Hippocardiidae* Pojeta & Runnegar, 1976: *Hippocardia* Brown, 1843 — O-C, *Rhipidocardium* Fischer, 1887 — S, *Bigalea* Pojeta & Runnegar, 1976 — S-D; *Conocardiidae* Miller, 1889: *Conocardium* Brown, 1835 — D-C, *Arceodomus* Pojeta & Runnegar, 1976 — C-P.

Suborder Ribeirioidei Kobayashi, 1933.

Superfamily Ribeirioidea. Shell oval or elongate, with a rounded anterior margin, without keel or radial sculpture. Ozomiidae Starobogatov, 1977; *Ozomia* Walcott, 1934 — O; Ribeiriidae Kobayashi, 1933; *Ribeiria* Sharpe, 1853 — Cm-O, *Pinnocaris* Etheridge, 1878 — Cm-O, *Ribeirina* Billings, 1865 — O.

Superfamily Technophoroidea. Shell quadrate, elongate, with a sharp keel and often a radial sculpture on carinal area. Technophoridae Miller, 1889: *Kimopegma* Pojeta, Gilbert-Tomlinson & Shergold, 1977 — Cm, *Pleuropegma* Pojeta, Gilbert-Tomlinson & Shergold, 1977 — Cm, *Opikella* Runnegar & Pojeta, 1974 — Cm, *Anisotechnophorus* Pojeta & Runnegar, 1976 — O, *Technophorus* Miller, 1889 — O, *Myocaris* Salter, 1864 — O.

Superfamily Ischyridoidea. Tomalchoviidae Starobogatov, 1977: *Cymatopegma* Pojeta, Gilbert-Tomlinson & Shergold, 1977 — Cm, *Tolmachovia* Howell & Kobayashi, 1936 — O, *Ptychopegma* Pojeta, Gilbert-Tomlinson & Shergold, 1977 — O, *Pauropegma* Pojeta, Gilbert-Tomlinson & Shergold, 1977 — O; Ischyridiidae Kobayashi, 1933: *Ischirinia* Billings, 1866 — O.

Order Poromyiformes Pelseneer, 1906.

Superfamily Dermatomyoidea. Septum with pairs of reticulated areas. Dermatomyidae fam. nov. Two pairs of reticulated areas: *Dermomya* Dall, 1889 — R, *Ectorisma* Tate, 1892 — We include here most species of genus *Poromya*, but those grouped with *P. granulata* (Nyst & Vestendorp) — R, *Cetomya* Dall, 1889 — R, *Liopista* Meek, 1864 — Cr, *Psilomya* White, 1874 — Cr, *Cymella* Meek, 1864 — Cr; Perlaporomyidae fam. nov. One (medial) pair of reticulated areas: *Perlaporomya* gen. nov. (type species *Poromya perla* Dall, 1908. Shell quadrate, quite as long as high; very small tubercles covering the outer surface; posterior part demarcated by a feeble groove; one subumbonal tooth on right valve, with a corresponding socket on left valve; reticulated areas with 18 to 20 filaments) — R.

Superfamily Poromyoidea. Septum with groups of paired pores. Cetoconchidae Ridewood, 1903: *Cetoconcha* Dall, 1886 — R; Poromyidae Dall, 1886: *Poromya* Forbes, 1884 — R, *Mioporomya* Sacco, 1901 — Ng.

Order Cuspidariiformes Scarlato & Starobogatov, 1971.

Suborder Dallicordioidei subordo nov. Shell verticordioid; a very large incoming siphonal opening, with many tentacles around; septum with 2 groups of openings on each side (in front of and behind the foot); septal musculature developed towards left; bundles obvious, corresponding with the existing filaments of inner demibranch.

Dallicordiidae fam. nov. Shell interiorly nacreous, septum with 4 pairs of openings: 2 pairs near the oral funnel and 2 pairs behind the foot; posterior part of oral lobes largely united with septum, *Dallicordia* gen. nov. (type species *Lyousiella alaskana* Dall, 1895. Shell rounded, irregularly pentagonal, truncated on anterior margin and rounded towards posterior margin; sculpture composed of narrow radial threads; hinge without teeth. *L. ushakovi* Gorbunov and *Policordia ochotica* Scarlato can also be placed in this genus) — R.

Suborder Cuspidarioidei Scarlato & Starobogatov, 1971.

Shell cuspidariid, with reduced siphonal openings, thus located both inside the rostrum at siphon's extremity; septum with only one group of openings (4 to 20) on each side, strongly muscularized; besides are developed, firstly 2 anterior pairs of muscles, and also posterior (1 or 2 pairs) and lateral (in a line or in 2 pairs) muscles.

Superfamily Neaeroporomyoidea. Neaeroporomyidae fam. nov. Shell interiorly nacreous, its posterior part somewhat drawn out into a rostrum; hinge with a subumbonal tooth on each valve: *Neaeroporomya* Cossmann, 1887 — Pg, *Pseudocnispidaria* Eames, 1951 — Pg.

Superfamily Protocuspidarioidea. Protocuspidariidae fam. nov. Shell not nacreous, rostrum short so that the anterior part of dorsal shell margin is straight and horizontal; hinge without teeth or

with an anterior tooth on only one valve or on both valves; septum comprising more than 10 pairs of short filaments among which septal openings are distributed: *Bidentaria* Allen & Morgan, 1981 — R, *Protocuspidaria* Allen & Morgan, 1981 — R, *Edentaria* Allen & Morgan, 1981 — R.

Superfamily Cuspidarioidea, Halonymphidae fam. nov. 8-20 pairs of septal openings; among the posterior septal muscles, posterolateral ones are only present; lateral septal muscles attached along a line: *Halonympha* Dall & Smith, 1886 — R, *Allenineaera* gen. nov. (type species *Neaera circinnata* Jeffreys, 1881. Shell oval quadrate, with a well-marked, straight, short rostrum and with a straight dorsal margin; sculpture composed of fine concentric ribs) — R, *Octoporia* gen. nov. (type species *Myonera octoporosa* Allen & Morgan, 1981. Shell drawn out in its posterior part in a long, rounded at the end, rostrum; dorsal and ventral margins of rostrum slightly concave; sculpture composed of concentric ridges, more strongly impressed on anterior part; hinge without teeth) — R; Cardiomyidae fam. nov. 4-5 pairs of septal openings; posterodorsal and posterolateral muscles simultaneously present; lateral septal muscles attached along a line: *Cardiomya* A. Adams, 1864 — Cr-R, *Kurodamya* Okutani & Sakurai, 1964 — R, *Semicardiomya* gen. nov. (type species *Myonera demistriata* Allen & Morgan, 1981. Shell with radial ribs on posterior half or on central and posterior parts, but with concentric ribs on anterior part; hinge without teeth) — R, *Bathyneaera* gen. nov. (type species *Cuspidaria hadalis* Knudsen, 1970. Shell compressed, with a feebly demarcated, rather short rostrum; strong radial ribs on posterior half of valves; hinge without teeth) — R; Myoneridae fam. nov. 4-5 pairs of septal openings; posterodorsal muscles only present; lateral septal muscles attached along a line: *Jeffreysiomya* Nordsieck, 1969 — Cr-R, *Vulcanomya* Dall, 1886 — R, *Leionya* A. Adams, 1864 — R, *Pseudoneaera* Sturany, 1902 — R, *Rhinoclama* Dall & Smith, 1886 — R, *Luzonia* Dall & Smith, 1886 — R, *Tergulina* Doncieux, 1911 — Pg, *Bowdenia* Dall, 1963 — Ng, *Rengea* Kuroda & Habe, 1971 — R, *Myonera* Dall & Smith, 1886 — R, *Plectodon* Carpenter, 1864 — Ng-R; Cuspidariidae Dall, 1886. 4-5 pairs of septal openings; posterodorsal muscles only present; lateral septal muscles united in 2 pairs of fibres, attached at extremity to valves: *Cuspidaria* Nardo, 1840 — R — Here, we only place *C. cuspidata* (Olivi), *C. jeffreysi* (Dall), *C. ventricosa* Verrill & Bush, *C. parkeri* Knudsen, *C. barnardi* Knudsen —, *Austroneaera* Powell, 1937 — R — Here, because of the shell form, we include also *Rhinoclama abrupta* Allen & Morgan, 1981 and we determine the systematic placement of genus because of the anatomical features of this species.

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## NOTE ADDED IN PRESS:

The present paper was in press when the following paper by Krylova was published, containing the description of one new genus, one new subgenus, and nine new species.

KRYLOVA, E. M., 1995. — [Bivalve molluscs of the family Protocuspidariidae (Septibranchia, Cuspidarioidea): composition and distribution.] *Zoologicheskyi Zhurnal*, **74** (9): 20-38. [in Russian]

## New taxa:

- Dentaria* Krylova, 1995. Type species (OD): *Multotentacula (Dentaria) parvula* Krylova, 1995.  
*Multotentacula* Krylova, 1995. Type species (OD): *Multotentacula admirabilis* Krylova, 1995.  
*amoena*, *Multotentacula (Dentaria)* Krylova, 1995. Kuriles-Kamchatka Trench, 5060 m.  
*composita*, *Multotentacula (M.)* Krylova, 1995. Caribbean, 2970-3080 m.  
*fragilis*, *Protocuspidaria (P.)* Krylova, 1995. Northeast Atlantic, 3714 m.  
*parilis*, *Multotentacula (Dentaria)* Krylova, 1995. Peru Trench, 2330 m.  
*parvula*, *Multotentacula (Dentaria)* Krylova, 1995. Western Atlantic, 4205 m.  
*paulula*, *Multotentacula (Dentaria)* Krylova, 1995. Southeast Atlantic, 4725 m.  
*pusilla*, *Protocuspidaria (Edentaria)* Krylova, 1995. Northeast Pacific, 5840 m.  
*speciosa*, *Protocuspidaria (Edentaria)* Krylova, 1995. Eastern Atlantic, 4278 m.  
*venusta*, *Multotentacula (M.)* Krylova, 1995. Great Australian Bight, 3880 m.